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MICHAEL F. MILLS.

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STUDIES
OF
NATURE.

BY
JAMES-HENRY-BERNARDIN DE SAINT-PIERRE.

.....MISERIS SUCCURRERE DISCO.

TRANSLATED BY
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WITH THE ADDITION OF NUMEROUS
ORIGINAL NOTES AND ILLUSTRATIONS,

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IN THREE VOLUMES.

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EXPLANATION OF THE PLATES.

FLOWERS. PLATE III.

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AS the explanation of this Plate is inserted in the text, all I shall say of it here is this, that the forms of flowers, which have a direct relation to the Sun, may all be reduced to those five primary patterns of flowers, to reverberated, perpendicular, conic, spheric, elliptic, and plane or parabolic; and flowers which have negative relations to the Sun, to the five other patterns of flowers in parasol, which are here represented in contrast with the first. At the same time, though these last be of forms much more diversified than reverberated flowers, all their negative species may be referred to those five positive forms.

I am of opinion, that if there were added to those five positive, or primordial forms, a certain number of accents, to express the modification of them, we should have the true characters of the florification, and an alphabet of that agreeable part of vegetation. I likewise presume that by means of this alphabet, it might be possible to characterize, on geographical Charts, the different sites of the vegetable kingdom. It would be sufficient to apply the signs of them to the forests which are there represented; for on seeing in the Chart, for the sake of supposition, that of the reverberated perpendicular, expressed by an ear of corn, or a prominent cone, we should instantly distinguish in it the forests of the North, or those of cold and lofty mountains. Particular accents, superadded to this character of prominent cone, would distinguish from each other the pine, the epicæa, the laryx, and the cedar; and rays issuing from these modified characters, would indicate the extent of the kingdoms of those different species of trees. The thing is not so difficult as may be imagined. Geography easily represents forests upon maps; all that would be farther requisite, therefore, is to affix to them certain signs, in order to ascertain their species, and those signs might likewise characterize, as we have seen, the latitude, or the elevation of the soil. Besides, we should leave out of such botanical Charts a multitude of political divisions, the names of which, in large characters, uselessly fill up a great deal of room. We should represent them in the domains of Nature only, and not those of men. Thus by means of these botanical signs, we might distinguish, at a single glance, on a map, the productions natural to each soil, the forests with their different species of trees, nay, the meadows too with the varieties of their herbage. There might be farther conveyed the humidity or the dryness of the territory, by adding to the signs of the flowers, the characters of

the leaves and seeds of vegetables. To these might afterwards be affixed, on the cities and villages represented, ciphers expressing the number of families which inhabit them, as I have seen in Turkish maps: thus we should have Charts really geographic, presenting at the first glance, an image of the richness and of the temperature of the territory, and of the number of its inhabitants. After all, this is not a plan which I presume to prescribe, but ideas which I have ventured to suggest, to be pursued, improved, and brought to perfection.

VOLATILE GRAINS. PLATE IV.

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HERE is presented, on the one hand, the spartha, or rush of the Spanish mountains, hollowed into a gutter, for the purpose of receiving the rain water; and, on the other, the cylindric or full rush of the marshes. The grain of this last resembles in it's state of expansion the eggs of a lobster. I have not been able to procure any of the grains of the spartha; but I have no doubt that, in opposition to those of the rush of the marshes, it must have a volatile character. I do not so much as know whether the spartha fructifies in our climate. Messrs. *Thouin*, the principal gardeners of the Royal Garden at Paris, could easily have gratified my curiosity in this respect. To these gentlemen I stand indebted for furnishing me with most of the grains and leaves which I have got engraved for this Work, among others the cone of the cedar of Lebanon; but accustomed in my solitary studies to investigate in Nature alone the solution of the difficulties which she throws in my way, I did not make application to them, though their hearts are replete with liberality and complaisance toward the ignorant as well as the learned.

Whatever the case may be as to this, it is to the fruit that Nature attaches the character of volatility; and it is by the leaf that she indicates the nature of the site in which the vegetable is destined to grow. Accordingly we perceive in this plate the cone of the cedar to be composed of thin flakes, like the artichoke. Every flake carries it's kernel; such is the one here represented detached from the cone; and each of them, as the fruit comes to maturity, flies off, by the help of the winds, toward the summit of the lofty mountains to which it is destined. Remark likewise that the leaves of the cedar are filiform; in order to resist the winds, which are violent on lofty mountains, and they are aggregated into clusters resembling pencils, for the purpose of collecting in the air the vapours which float about in it. Each leaf of this tree has more than one aqueduct traced in it lengthwise; but being extremely minute, it was impossible to express it in the engraving. Farther, that filiform and capillaceous shape, so well adapted to resisting the winds, as well as that which is of the sword blade form, is common to vegetables of the mountains, such as pines, larches, cedars, palm-trees; it is likewise frequently found on the edge of waters equally exposed to violent winds, as in rushes, reeds, the leaves of the willow: but the foliage of these last differs essentially from that of the first, in that there is no aqueduct in it, whereas the leaves of mountain vegetables have one; neither is their aggregation similar.

The dandelion grows like the cedar, in dry and elevated situations. It's grains are suspended to a complete sphere of shuttle-cocks, which forms outwardly a very regular polyedron, having a multitude of hexagonal or pentagonal faces. These faces are not expressed in the print, because it has been copied after that of a highly valued botanical Work, but which, like books in every department of literature, collects only the characters which make for a

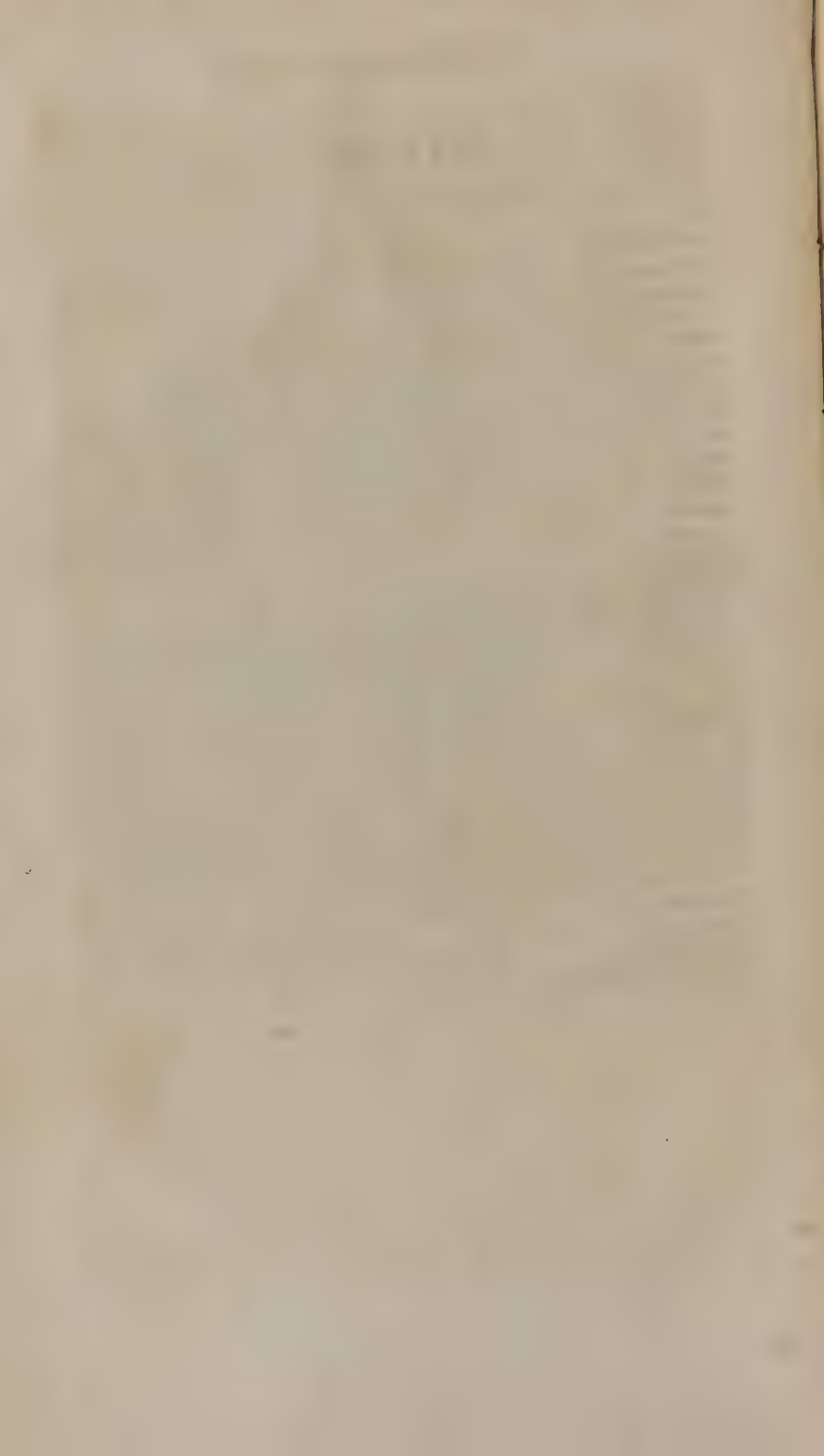
favourite system. The leaf of the dandelion particularly determines it's natural site ; it is broad and fleshy, because expanding itself close to the ground, on which it forms stars of verdure, it has nothing to fear from the winds : it is deeply indented, like the teeth of a saw, for the purpose of opening a passage to the grasses ; and it's indentings are bent inward to catch the rain-water, and convey it to the roots. Thus Nature adapts the means to each subject, and redoubles her attention in proportion to it's weakness. The sphere of the dandelion is more artfully formed than the cone of the cedar, and beyond all contradiction much more volatile. It requires a tempest to carry the seeds of the cedar to any considerable distance ; but the breath of the zephyr is sufficient to resow those of the dandelion. A Lebanon is likewise necessary for planting the first ; but the second needs only a mole-hill. This small vegetable is likewise more useful in the World than the cedar ; it serves for food to a great many quadrupeds, and to a variety of small birds, which fatten on it's grains. It is very salutary to the human species, especially in the Spring season. We accordingly find great numbers of poor people at that time picking up it's young shoots in the fields. It is moreover the only plant which Nature presents gratuitously to Man in our Climates. It universally thrives in dry places, and even in the seams of the pavement. It frequently carpets the court-yards of Hotels, the masters of which are not over-burthened with vassals, and seems to invite the miserable to walk in. It's gold coloured flowers very agreeably enamel the foot of the walls, and it's feathered sphere, raised upon a long shaft, in the bosom of a star of verdure, is by no means destitute of beauty.

It is the leaf then which particularly determines the natural site of a vegetable ; for as we have seen there are aquatic plants which have their grains volatile, because they grow on the brink of lakes or marshes which have no currents, such as the willow and the reed ; but their leaves in that case have no aqueduct. Nay, there are some which have a pendent direction, and which from that attitude refuse to admit the water from Heaven. The maple of Virginia, which delights in the brinks of lakes, marshes, and creeks, has grains attached to membranous wings, resembling those of a fly, as the seeds of the mountain maple represented in the plate. But there is this remarkable difference between them, that the broad leaf of the first is pendent, and attached to a long tail ; that this tail so far from being furnished with an aqueduct has a ridge ; and that the leaf of the mountain maple, which is of a moderate size, angular and barked, for resisting the winds, rises almost vertically, and bears an aqueduct on it's tail, to receive the waters of Heaven

AQUATIC GRAINS. PLATE V.

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AQUATIC GRAINS have characters entirely opposite to those which are produced on the mountains; if we except, as has been said, those which thrive on the brink of stagnant waters; but even these possess at once volatile and nautical characters, for they are amphibious. They swim along the surface of the water, and they fly through the air; such is that of the willow and several others. It is the leaf which determines the site, as we have observed, for aquatic plants never have any aqueduct on their leaves. Nay, most of them repel the water. The leaves of the *nymphæa* and of the reed are never wet. It is likewise so with those of the *nasturtium*, which are never humid, however copiously the rain may fall, though that plant is excessively fond of the water; for the culture of it consumes an incredible quantity. I am persuaded that if a morass were sown with plants of this sort, it would be speedily dried up. The leaf of the *martinia* of Vera Cruz, which is here represented among aquatic plants, is, on the contrary, always humid. It has even in it's first expansion a fluting on it's tail. From this double mountain character I am disposed to suspect that the *martinia* naturally grows on the parched and sandy shores of the Sea; for Nature, in the view of varying her harmonies, extends very dry places along the brink of the waters, just as she deposits sheets of water and morasses in the bosom of mountains. But from the form of the pod of the *martinia*, which resembles a hook for fishing gilt-heads, I believe it to be destined to grow in situations exposed to inundations of the Sea, as is in fact the case with the territory of Vera Cruz, from whence this species originally is. I presume therefore that when the shores of Vera Cruz are overflowed by high tides, you must see fishes caught by this plant, for the stem of it's pod is not easily broken off; it's two crotchets are pointed like fishing-hooks, are elastic, and hard as horn. Besides when it is soaked in water, it's furrows, shaded with black, shine as if they were filled with globules of quick-silver. Now the lustre of this light is a farther bait to attract the fishes. I present these merely as conjectures, but I found them on a principle which is indubitably certain, namely, That Nature has made nothing in vain



STUDIES OF NATURE.

SEQUEL TO STUDY X.

OF THE HUMAN FIGURE.

ALL the harmonic expressions are combined in the Human Figure. In treating this article, I shall confine myself to the examination of some of those which compose the head of Man. Observe it's form in an approximation to the spherical, which, as we have seen, is *the* form by way of excellence. I do not believe that this configuration is common to it with that of any animal whatever. On it's anterior part is traced the oval of the face, terminated by the triangle of the nose, and encompassed by the radiations of the hair. The head is, besides, supported by a neck of considerably less diameter than itself, which detaches it from the body by a concave part.

This slight sketch presents to us at first glance the five harmonic terms of the elementary generation of forms. The hair exhibits lines; the nose the triangle; the head the sphere; the face the oval; and the void under the chin the parabola. The neck which like a column sustains the head, exhibits likewise the very agreeable harmonic form of the cylinder, composed of the circular and quadrilateral.

These forms, however, are not traced in a stiff and geometrical manner, but imperceptibly run into each other, and mutually blend as the parts of the same whole ought to do. The hair does not fall in straight lines, but in flowing ringlets, and harmonizes with the oval of the face. The triangle of the nose is neither acute, nor does it present a right angle; but, by the undulatory swelling of the nostrils, presents a harmony with the heart-form of the mouth, and sloping toward the forehead, melts away into the cavities of the eyes. The spheroid of the

head in like manner amalgamates with the oval of the face. The same thing holds with respect to the other parts, as Nature employs in their general combination the roundings of the forehead, of the cheeks, of the chin, of the neck, that is, portions of the most beautiful of harmonic expressions, namely the sphere.

There are farther several remarkable proportions which form with each other very pleasing harmonies and contrasts: such is that of the forehead, which presents a quadrilateral form in opposition to the triangle, composed of the eyes and the mouth; and that of the ears, formed of very ingenious acoustic curves, such as are not to be met with in the auditory organ of animals, because in the case of mere animals the ear is not intended to collect, like that of a Man, all the modulations of speech.

But I must be permitted to expatiate somewhat more at large on the charming forms assigned by Nature to the eyes and the mouth, which she has placed in the full blaze of evidence, because they are the two active organs of the soul. The mouth consists of two lips, of which the upper is moulded into the shape of a heart, that form so lovely as to have become proverbial for its beauty; and the under is rounded into a demi-cylindric segment. In the opening between the lips we have a glimpse of the quadrilateral figure of the teeth, whose perpendicular and parallel lines contrast most agreeably with the round forms adjoining, and so much the more, as we have seen that the first generative term being brought into union with the supremely excellent harmonic term, that is, the straight line with the spherical form, the most harmonic of all contrasts results from it.

The same relations are to be found in the eyes, the forms of which combine still more the harmonic elementary expressions; as it was fit the chief of all the organs should do. They are two globes fringed on the lids with eye-lashes, radiating with divergent pencil-strokes, which form with them a most delightful contrast, and present a striking consonance with the Sun, after which they seem to have been modelled, having like that orb a spherical figure, encircled with divergent rays in the eye-lashes; having a movement of self-rotation, and possessing the power, like him, of veiling themselves in clouds by means of their lids.

The same elementary harmonies may be traced in the colours of the head, as well as in its forms ; for we have in the face the pure white exhibited in the teeth and in the eyes ; then the shades of yellow which dissolve into it's carnation, as the Painters well know ; after that the red, the eminently excellent colour, which glows on the lips and on the cheeks. You farther remark the blue of the veins, and sometimes that of the eye-balls ; and finally the black of the hair, which by it's opposition gives relief to the colours of the face, as the vacuum of the neck detaches the forms of the head.

You will please to observe, that Nature employs not, in decorating the human face, colours harshly opposed ; but blends them, as she does the forms, softly and insensibly into each other. Thus the white melts here into the yellow, and there into the red. The blue of the veins has a greenish cast. The hair is rarely of a jet black ; but brown, chesnut, flaxen, and in general of a colour into which a slight tint of the carnation enters, in order to prevent a violently harsh opposition. You will farther observe, that as she employs spherical segments in forming the muscles which unite the organs, and in order particularly to distinguish these very organs, she makes use of red for the same purpose. She has accordingly extended a slight shade of it to the forehead, which she has strengthened upon the cheeks, and which she has applied pure and unmixed to the mouth, that organ of the heart, where it forms a most agreeable contrast with the whiteness of the teeth. The union of this colour with that harmonic form is the most powerful consonance of beauty ; and it is worthy of remark, that wherever the spherical forms swell, there the red colour strengthens, except in the eyes.

As the eyes are the principal organs of the soul, they are destined to express all it's emotions ; which could not have been done with the harmonic red tint, for this would have given but one single expression. Nature, in order there to express the contrary passions, has united in the eye the two most opposite of colours, the white of the orbit and the black of the iris, and sometimes of the ball, which form a very harsh opposition, when the globes of the eyes are displayed in the full extent of their diameter ; but by means of the eye-lids, which Man can contract or dilate at pleasure, he is enabled to give them the expression of all the passions from love to fury.

Those eyes whose balls are blue are naturally the softest, because the opposition in this case is less harsh with the adjacent white ; but they are the most terrible of all when animated with rage, and this from a moral contrast which constrains us to consider those as the most formidable of all objects, that menace evil, after having encouraged us to expect good. Persons therefore who are thus distinguished, ought to be carefully on their guard against treachery to that character of benevolence bestowed on them by Nature ; for blue eyes express by their colour something enchantingly celestial.

As to the movements of the muscles of the face, it would be extremely difficult to describe them, though I am fully persuaded it might be possible to explain their Laws. Whoever shall attempt this, must of necessity refer them to the moral affections. Those of joy are horizontal, as if the soul, in the enjoyment of felicity, had a disposition to extend itself. Those of chagrin are perpendicular, as if, under the pressure of calamity, the mind was looking toward Heaven for refuge, or seeking it in the bosom of the earth. Into such an explanation of the Laws of muscular motion must likewise enter the alterations of colours, and the contractions of forms, and in these at least we shall discover the truth of the principle which we have laid down, that the expression of pleasure is in the harmony of contraries blending with each other in colours, forms, and motions ; and that the expression of pain consists in the violence of their oppositions. The eyes alone have motions ineffable and it is remarkable, that under the influence of very strong emotions they are suffused with tears, and thus seem to have a farther analogy with the orb of day, who in the season of tempests shrouds himself in rainy distillations.

The principal organs of sense, four of which are placed in the head, have particular contrasts, which detach their spherical forms by means of radiated forms ; and their shining colours by means of dusky tints. Thus the bright organ of vision is contrasted by the eye-brows ; those of smell and taste by the mustaches ; the organ of hearing by that part of the hair called the *favourite lock*, which separates the ear from the face ; and the face itself is distinguished from the rest of the head by the beard and by the hair.

We shall not here examine the other proportions of the human figure in the cylindric form of the neck, opposed to the spheroid of the head, and to the plane surface of the breast; the hemispherical forms of the paps, which contrast with the flatness of the chest; as well as the cylindrical pyramids of the arms and fingers with the omoplate of the shoulders; the consonances of the fingers with the arms, by means of three similar articulations, with a multitude of other curvatures and of other harmonies, which hitherto have not so much as a name in any language, though they are in every country the all-powerful expression of beauty.

The human body is the only one which unites in itself the modulations and the concerts, inexpressibly agreeable, of the five elementary forms and of the five primordial colours, without exhibiting any thing of the harsh and rude oppositions perceptible in the brute creation, such as the prickles of the hedgehog, the horns of the bull, the tusks of the wild-boar, the fangs of the lion, the marbled skin of the dog, and the livid and disgusting colours of venomous animals. It is the only one of which the first touch is perceptible, and which you can see completely; other animals being disguised under hair, or feathers, or scales, which conceal their limbs, their shape, their skin. Farther, it is the only form which, in it's perpendicular attitude, displays all it's positions and directions at once; for you can hardly perceive more of a quadruped, of a bird, of a fish, than one half, in the horizontal position which is proper to them, because the upper part of their body conceals the under.

We must likewise remark, that Man's progressive motion is subject to neither the shocks nor the tardiness of movement of most quadrupeds, nor to the rapidity of that of birds; but is the result of movement the most harmonic, as his figure is of forms and of colours the most delightful.*

* It has been maintained by certain celebrated Authors, that the Negroes consider their own colour as more beautiful than that of the whites; but it is a mistake. I have put many a question on this subject to black people who were in my own service in the Isle of France, and who were at perfect liberty to tell what they really thought, especially on a subject so indifferent to slaves, as the beauty of the whites. I sometimes asked them whether of the two they would prefer, a black wife or a white? They never hesitated an instant in declaring their preference of the white women. Nay, I have seen a Negro who had been almost flayed alive by the whip, in one of our plantations,

The more that the multiplied consonances of the human figure are agreeable, the more disgusting are it's dissonances. This is the reason that, on the face of the Earth, there is nothing so

express the highest delight when the scars of his sores began to whiten, because it suggested the hope that he was thereby going to change colour, and to be negro no longer. The poor wretch would gladly have parted with his whole hide to become white. This preference we shall be told is, in that case the effect of the superiority which they are obliged to ascribe to the Europeans. But the tyranny of their masters ought rather to inspire abhorrence of the colour. Besides, the black men and women of our colonies express the same tastes that our peasantry at home do, for stuffs of lively and glaring colours. Their supreme luxury in dress is a red handkerchief tied round the head. Nature has bestowed no other tints on the roses of Africa than upon those of Europe.

If the judgment of black slaves is considered as a suspicious authority on the subject, we may refer the decisions to the Sovereigns of Africa, who are under no temptation to dissemble. They fairly acknowledge that in this, as well as in many other respects, they have been more hardly dealt with than the Europeans. African Princes have made frequent application to the Governors of the English, Dutch, and French settlements on the coast for white women, under a promise of very ample privileges in return. *Lamb*, an English agent at Ardra, when prisoner to the King of Dahomay, in the year 1724, sent word to the Governor of the English fort of Juida, that if he could send a white man, or even a mulatto, to this Prince, she might acquire an unbounded influence over his mind. (*General History of Voyages, by the Abbe Prevost*, book viii. page 96.)

Another King, on a different part of the coast of Africa, promised one day to a Capuchin Missionary, who was preaching the Gospel in his presence, to dismiss his seraglio, and embrace Christianity, if he would procure him a white woman to wife. The zealous Missionary immediately repaired to the nearest Portuguese settlement; and having enquired whether there might not be among them some pure and virtuous damsel, such as might suit his purpose, he was informed of such a person, the niece of a decayed man of family, who lived in a state of great privacy. He waited for her one Sunday morning at the door of the church, as she was returning from mass with her kinsman; and addressing himself to the uncle before all the people, charged him, in the name of God, and as he valued the interests of religion, that he would bestow his niece in marriage on the Negro King. The gentleman and his niece having given their consent, the black Prince married her, after having dismissed all his other women, and received public baptism. (*History of Ethiopia, by Labat*.)

The best informed travellers relate many such anecdotes of a similar preference expressed by the black Sovereigns of Africa, and of southern Asia. *Thomas Rowe*, Ambassador from England at the Court of the Mogul *Selim-Scha*, relates, that a very cordial reception was given by this powerful Monarch to certain Portuguese Jesuits, who had come as missionaries into his dominions, with a view to obtain, through their means, some women of their

beautiful as a handsome man, nothing so shocking as a very ugly one.

This farther suggests a reason why it will be forever impossible for art to produce a perfect imitation of the human figure, from the difficulty of uniting in it all the harmonies ; and from the still greater difficulty of effecting a complete combination of those which are of a different nature. For example, the Pain-

country to recruit his seraglio. He began with conferring on them singular privileges ; had apartments provided for them in the vicinity of his palace, and admitted them to his most intimate familiarity : but perceiving that those good fathers discovered no great inclination to gratify his desires, he practised a very ingenious artifice to draw them into compliance. He expressed an extreme partiality to the Christian Religion ; and pretending that he was restrained merely by reasons of State from openly embracing it, he gave strict orders to two of his nephews to attend punctually on the catechetical instructions of the missionaries. When the young men had acquired a competent degree of knowledge, he enjoined them to get themselves baptized, and this being complied with, he thus addressed them : “ It is now no longer in your power “ to marry pagan women, and of this country ; for you have made profession “ of Christianity. It is the duty of the fathers who baptized you to procure you “ wives. Tell them they must send to Portugal for women to be your brides.” The young proselytes did not fail to make this demand on the good fathers ; who suspecting that the Mogul’s real intention, in marrying his nephews to Portuguese wives, was to procure a supply of white women for his seraglio, refused to engage in this negociation. Their refusal highly incensed *Selim-Scha*, and exposed them to much persecution : he immediately commanded his nephews to renounce Christianity. (*Memoirs of Thomas Rowe, Therenot’s Collection.*)

The black colour of the skin is, as we shall presently see, a blessing from Heaven to the Nations of the South, because it absorbs the reflexes of the burning Sun under which they live. But the men of those Nations do not the less on that account consider white women as more beautiful than the black, for the same reason that they think the day more beautiful than the night, because the harmonies of colours and of lights render themselves perceptible in the complexion of the whites, whereas they almost entirely disappear in that of the blacks, who can pretend to no competition with the others in point of beauty, except as to form and stature.

The proportions of the human figure having been taken, as we have just seen, from the most beautiful forms of Nature, are become in their turn models of beauty for Man. If we attend to this, we shall find that the forms which please us most in works of art, as those of antique vases, and the relations of height and breadth in monuments, have been taken from the human figure. It is well known that the Ionic column, with it’s capital and it’s flutings, was imitated after the shape, the head-dress, and the drapery of the Grecian young women

ter may succeed tolerably in imitating the colours of the face, and the Sculptor in expressing it's forms. But were an attempt made to unite the harmony of colours and of forms in a single bust, such a production will be very inferior to a mere picture, or to a mere piece of sculpture, because it will combine particular dissonances of colours and of forms, besides their general dissonance, which is still more strongly marked. If to these it were farther attempted to add the harmony of movements, as in the case of an automaton, this would only aggravate the incongruity. Were art to continue it's effort, and try to bestow the gift of speech likewise, this must produce a fourth dissonance, which would be absolutely hideous ; for here the intellectual system would clash frightfully with the physical system. It is accordingly matter of no surprize to me that St. *Thomas Aquinas* was so shocked at the speaking head, in constructing which, his master *Albert the Great* had employed so many years, that under the influence of horror he instantly broke it to shivers. It must have produced on him the same impression which he would have felt had he heard an articulate voice issuing out of a dead man's mouth. Such labours in general do the Artist much honour ; but they demonstrate the weakness of Art, which falls below Nature just in proportion as it aims at uniting more of her harmonies. Instead of blending them, as Nature herself does, Art can only place them in opposition.

All this proves the truth of the principle which we have laid down, namely, that harmony results from the union of two contraries, and discord from their collision : and the more agreeable that the harmonies of an object are, the more disgusting are it's discordances. This is the real origin of pleasure and of dislike in physics as in morals, and the reason why the same object so frequently excites affection and aversion.

A great variety of very interesting reflections remain to be made on the human figure, especially by connecting with it the moral sensations, which alone give expression to the features. We shall introduce some of these in the sequel of this Work, when we come to speak of sentiment. Be it as it may, the physical beauty of Man is so striking in the eyes even of the animal creation, that to it principally must be ascribed the empire which he exercises over them in every part of the Earth.

The feeble flee for refuge under his protection, and the most powerful tremble at sight of him. *Mathiola* relates, that the lark will save herself amidst troops of men when she perceives the bird of prey hovering over her. The reality of this instinct was confirmed to me by an officer who was once an eye-witness of one in such circumstances, fleeing for safety among a very distinguished squadron of cavalry in which he then served ; but the trooper whose particular protection she sought, trampled her to death under his horse's feet ; a most barbarous action, which drew on him, and justly, the indignation of every good man in the corps.

I myself have seen a stag, when run down by the hounds, appeal with sobs for relief to the compassion of persons accidentally passing that way. *Pliny* relates a similar fact, and it is consistent with my own experience when I was in the Isle of France, which I have detailed in the journal of my Voyage to that Island. I have seen in the farm yards the India hens, under the impulse of love, go and throw themselves chuckling at the feet of the country people. If we meet less frequently with instances of the effect of animal confidence in Man, it is because of the noise of our fowling pieces scaring them incessantly, and of the continual other persecutions which they are doomed to undergo.

It is well known with what familiarity the monkeys, and fowls of all kinds, approach travellers in the forests of India.* I have seen at the Cape of Good-Hope, in Cape-town itself the shores of the Sea swarming with water-fowls, which perched confidently on the shallops, and a large wild pelican playing close by the custom-house with a great dog, whose head she took into her enormous beak. This spectacle conveyed to me from the moment of my arrival, a most powerful impression in favour of the happiness of that country, and of the humanity of it's inhabitants: nor did my conjecture deceive me.

But dangerous animals on the contrary are seized with terror at the sight of Man, unless they be driven from their natural bias by some pressing necessity. An Elephant will suffer himself to be led about in Asia by a little child. The African lion retires growling from the cabin of the Hottentot ; surrenders up

* See *Bernier* and *Mandesty*.

to him the possessions of his ancestors, and seeks for himself a kingdom far remote, in forests and among rocks untrodden by the foot of Man. The immense whale, amidst his native element, trembles and flees away before the puny bark of the Laplander. And thus to this day is executed that all potent Law which secured empire to Man, though sunk into guilt and wretchedness: "And the fear of you, and the dread of you, shall be upon every beast of the earth, and upon every fowl of the air; upon all that moveth upon the earth, and upon all the fishes of the sea; into your hand are they delivered."*

It is singularly remarkable, that through the whole extent of Nature there is no animal whatever, nor plant, nor fossil, nor even globe, but what has it's consonance and it's contrast out of itself, Man excepted. No one visible being enters into society with him but either as his servant or as his slave.

We must undoubtedly reckon among the human proportions that Law so universal, and so wonderful, which produces males and females in equal numbers. Did chance preside over the generation of the human race as over our alliances, we should one year have an unmixed crop of male children, and another a race entirely female. Some nations would consist wholly of men, and others wholly of women; but all over the Globe the two sexes are born, within the same space of time, equal in number. A consonance so regular clearly demonstrates that a Providence is continually watching over the affairs of Mankind, notwithstanding the absurdity and disorder of human institutions. This may be considered as a standing testimony to the truth of our religion, which likewise limits Man to one Woman in Marriage, and, by this conformity to natural Laws peculiar to itself, seems alone to have emanated from the AUTHOR of Nature. It may fairly be concluded on the contrary, that a religion which permits or connives at a plurality of wives must be erroneous.

Ah! how little acquainted are they with the Laws of Nature, who in the union of the two sexes, look for nothing farther than the pleasures of sense! They are only culling the flowers of life, without once tasting of it's fruit. The fair sex! this is the phrase of our men of pleasure; women are known to them un-

der no other idea. But the sex is fair only to persons who have no other faculty except that of eye-sight. It is besides, to those who have a heart, the creative sex, which at the peril of life carries Man for nine months in the womb; and the cherishing sex, which suckles and tends him in infancy. It is the pious sex, which conducts him to the altar while he is yet a child, and teaches him to draw in, with the milk of the maternal breast, the love of a religion which the cruel policy of men would frequently render odious to him. It is the pacific sex, which sheds not the blood of a fellow creature; the sympathizing sex, which ministers to the sick, and handles without hurting them.

To no purpose does Man pretend to boast of his power and his strength; if his robust hands are able to subdue iron and brass, those of the women, more dextrous and more usefully employed, can spin into threads the flax and the fleeces of the sheep. The one encounters gloomy care with the maxims of philosophy; the other banishes it by sportiveness and gaiety. The one opposes to external evils the force of his reason; the other far happier, eludes them by the mobility of her's. If the man sometimes considers it as his glory to bid defiance to danger in the field of battle, the woman triumphs in calmly meeting dangers more inevitable, and frequently more cruel, on her bed and under the banners of pleasure. Thus they have been created to support together the ills of life, and to form by their union the most powerful of consonances and the sweetest of contrasts.*

I am obliged by the plan of my Work to proceed, and to refrain from pursuing my reflections on subjects so interesting as the marriage and the beauty of Man and Woman. I must however hazard some farther observations extracted from my store, in order to induce others to dive into this rich mine, with the additional value of novelty.

All Philosophers who have made Man their particular study are agreed, and with good reason, that he is the most wretched

* This eulogium on the female is a very impressive one. It is, evidently, the effusion of a feeling heart; the reflection of a mind practically acquainted with the genuine features of the two sexes. The tranquillity and resignation of the women on their death bed are daily attested by physicians. But this tranquillity, this resignation, are seldom spoken of, while we catch with eager solicitude, the dying words of the prouder man, or harder philosopher, who with difficulty tells us, what his features too frequently contradict, "that it is easy to die"—B. S. B.

of all animals. Most of them appear to have been sensible that an associate was necessary to him to relieve his burthens, and they have made his happiness in part to consist of friendship. This is an evident demonstration of human weakness and misery ; for were man naturally strong he would stand in no need of either associate or assistance. Elephants and lions live solitary in the forests. They need no friends, because Nature has made them strong.

It is very remarkable that when the Ancients give us a representation of perfect friendship, it is always restricted to two, whatever may be the extent of human weakness ; for man is frequently reduced to the necessity of deriving his felicity from the concurring interposition of many beings similar to himself. Several reasons may be assigned for this restriction, the principal of which are deducible from the nature of the human heart, which from it's very weakness is capable of attaching itself to only one object at once ; and which being compounded of opposite passions that maintain a perpetual counterpoise, is in some sense both active and passive, and stands in need of loving and of being beloved, of comforting and of being comforted, of honouring and of being honoured, and so on. Accordingly all the friendships celebrated in the historic page existed only between two persons ; such as those of *Castor and Pollux* ; of *Theseus and Perithous* ; of *Hercules and Iolas* ; of *Orestes and Pylades* ; of *Alexander and Hephestion*, and many others.

It is farther to be remarked that those singular friendships have ever been associated with virtuous and heroic actions ; but whenever the union comprehended more persons than two, it was speedily dissolved by discord, or if permitted to subsist for any length of time, became famous only for the mischief which it brought on Mankind : such was that of the triumvirate among the Romans. In cases when the associates in such alliances were still more numerous, the mischief which they did was always in proportion to the greatness of the number of which they consisted. Thus the tyranny of the Decemviri at Rome exhibited a violence still more cruel than that of the Triumviri, for it spread destruction, we may venture to say, without passion and in cold blood.

There are likewise triumvirates and decemvirates : these are your various descriptions of Corps. With good rea-

son have they obtained the appellation of *Corps*; for they frequently have a center distinct from their Country, of which they ought only to be members. They have likewise views distinct from those of their Country, a distinct ambition and distinct interests. They are with relation to the rest of the citizens, inconstant, detached, destitute of an object, and frequently destitute also of the spirit of patriotism: they are that, in a word, which regular troops are with relation to light troops. They will not suffer them to appear in an avenue along which they themselves are advancing, and dispossess them of the posts which they may have occupied the whole length of their route. How many revolutions have been effected in Russia by the *Strelitzes*; in Rome by the Pretorian guards; at Constantinople by the Janizaries; and elsewhere by Corps still more political? Thus, by a just re-action of Providence, the spirit of Corps has been as fatal to Countries as the spirit of Country has itself been to Mankind.

If the heart of Man admits of but a single object, what judgment shall we form of our modern friendships, embracing as they do such a multiplicity? Undoubtedly if a man has thirty friends, he can bestow on each of them only the thirtieth part of his affection, and can receive in return no greater proportion of theirs. He must of necessity therefore deceive them; for no one is disposed to be a friend by fractions.

But if the truth may be told, such friendships are merely confederacies of ambition; relations interested and purely political, employed entirely in practising mutual illusion, in the view of aggrandizing themselves at the expense of society; and which would be productive of unspeakable mischief, were they more closely united among themselves, and unless they are counterbalanced by opposite confederacies. Almost all our general associations accordingly issue in intestine wars. On the other hand, I do not speak of the inconveniencies which result from particular unions rather too intimate. The most celebrated friendships of Antiquity have not been in this respect wholly exempt from suspicion, though I am persuaded they were as virtuous as the persons who were the objects of them.

The AUTHOR of Nature has given to each of us in our own species a natural friend, completely adapted to all the demands of human life, capable of supplying all the affections of the heart,

and all the restlessness of temperament. He says from the beginning of the World : " It is not good that the man should be alone : I will make him an help meet for him ;—and the LORD " GOD made Woman, and brought her unto the Man."* Woman pleases all our senses by her form and by her graces. She has in her character every thing that can interest the heart of Man, and at every stage of human life. She merits by the long and painful solitudes which she exercises over our infancy, our respect as a mother, and our gratitude as a nurse ; afterward as Man advances to youth, she attracts all his love as a mistress ; and in the maturity of manhood, all his tenderness as a wife, his confidence as a faithful steward, his protection as being feeble ; and even in old age she merits our highest consideration as the source of posterity, and our intimacy as a friend who has been the companion of our good and bad fortune through life. Her gaiety, nay her very caprices, balance, at all seasons, the gravity and the over-reflective constancy of Man, and acquire reciprocally a preponderancy over him.

Thus the defects of the one sex and the excess of the other are in exact mutual compensation. They are formed, if I may use the expression, to be grooved into each other, like the corresponding pieces of carpenters-work, the prominent and retreating parts of which constitute a vessel fit to launch on the stormy ocean of life, and to attain additional strength from the very buffetings of the tempest. Had we not been informed by a sacred tradition, that Woman was extracted from the side of Man ; and though this great truth were not every day manifested in the wonderful birth of the children of the two sexes in equal numbers, we should be speedily instructed in it by our wants. Man without the Woman and Woman without the Man, are imperfect beings, in the order of Nature. But the greater contrast there is in their characters, the more complete union there is in their harmonies. It is, as we have already briefly hinted, from their oppositions in talents, in tastes, in fortunes, that the most intense and the most durable affection is produced. Marriage is therefore the friendship of Nature, and the only real union which is not exposed, like those which exist among men, to estrangement, to rivalry, to jealousies, and to the changes which time is effecting in our inclinations.

* Genesis, chap. ii. ver. 18, 22

But wherefore are there so few happy marriages among us ? I answer, because with us the sexes have divested themselves each of it's proper nature, and assumed the other. It is because the women with us adopt the manners of men from education ; and men the manners of women from habit. The women have been despoiled of the graces and of the talents peculiar to their sex, by the masters, the sciences, the customs, the occupations of men. There is no way left save one, but that is infallible, to bring both back to Nature ; it is to inspire them with a taste for Religion. By Religion, I do not mean attachment to ceremonies, or systems of Theology ; but the religion of the heart, pure, simple, unostentatious ; such as it is so beautifully depicted in the Gospel.

Religion will restore to the two sexes not only their moral character, but their physical beauty. It is not climate, it is not aliment, it is not bodily exercise, nor all these together which form human beauty ; it is the moral sentiment of virtue, which cannot subsist independently of Religion. Aliment and exercise no doubt contribute greatly to the magnitude and the expansion of the body ; but they have no manner of influence on the beauty of the face, which is the true physiognomy of the soul. It is by no means uncommon to see persons tall and robust disgustingly ugly ; with the stature of a giant and the face of a monkey.

Beauty of face is to such a degree the expression of the harmonies of the soul, that in every country those classes of citizens who are, from their condition, obliged to live with others in a state of constraint, are sensibly the homeliest of the society. The truth of this observation may be ascertained, particularly among the noblesse of many of our provinces, who live with each other in the perpetual jealousy of rank, and with their neighbours of an inferior order in a state of unremitting hostility, for the maintenance of their prerogatives. Most of those Nobles present a complexion billious and parched. They are meagre, sulky, and perceptibly uglier than the other inhabitants of the same district, though they breathe the same air, live on the same aliments, and in general enjoy a superior degree of fortune. Accordingly, they are far from being gentlemen both in name and in fact. Nay, there is a Nation bordering upon ours, the subjects of which are as much celebrated all over Europe for

their pride as for their homeliness. All those men are rendered hard-favoured from the same causes that most of our children degenerate in look ; who, however amiable in early life, become ugly on going to college, from the miseries and irksomeness of these institutions. I say nothing of their natural character, which undergoes the same revolution with their physiognomy ; this last being always a consequence of the other.

The same thing does not hold good respecting the noblesse of some other of our provincial districts, and the nobility of other parts of Europe. These living as they do, in good understanding among themselves, and with their compatriots, are in general the handsomest men of their Nation, because their social and benevolent spirit is not in a state of incessant constraint and anxiety.

To the same moral causes may be referred the beauty of the features of the Greek and Roman physiognomies, where we generally meet with models so exquisite in their statues and medallions. They were beautiful, because they were happy ; they lived in cordial union with their equals, and in the enjoyment of popular favour with the citizens at large. Besides, there were among them no melancholy, moping, monkish institutions, similar to those of our colleges, contrived to disfigure the whole youth of a Nation at once. The descendants of those same Nations are at this day far from exhibiting a resemblance to their ancestors, though the climate of their country is not in the smallest degree changed.

It is farther to moral causes that we must refer the singularly dignified physiognomies of the great Lords of the Court of *Louis XIV.* as is visible in their portraits. In general, persons of quality being by their rank elevated above the rest of the Nation, do not live continually at daggers drawing with each other, and with the other subjects of the State, as is the case of most of our small country-gentlemen. Besides they are usually educated under the paternal roof, that is, under the blessed influence of domestic enjoyment, and far remote from jealousy and strife. But those of the age of *Louis XIV.* had this distinguished advantage over their posterity, that they were taught to value themselves on beneficence, and popular affability, and on bestowing their patronage upon talents and virtue wherever they found them. There is not,

perhaps, a great family of that period, but what has the honour to boast of having brought forward and raised into distinction, some one man of obscure birth, or of the inferior Nobility, who afterwards rendered himself illustrious, by means of such support, in arts, in literature, in the church, or in the army.

These grandees acted thus, in imitation of the Sovereign, or perhaps from a remainder of the spirit of the magnificence of the feudal government, which then expired. Be this as it may, they were handsome, because they were contented and happy ; and this noble emotion of soul toward beneficence, has impressed on their physiognomy a majestic character, which will ever distinguish them from the men of preceding ages, and still more from that which has succeeded.

Observations of this kind are not an object of curiosity merely : they are of much more importance than is generally apprehended ; for it follows as a necessary consequence, that in order to form in a Nation beautiful children, and of course handsome men, in both the physical and moral sense of the word, it is not necessary, according to the doctrine of certain medical men, to subject the human species to regular purgation, and under particular aspects of the Moon. Children restricted to a rigid regimen of this sort, as are most of those of our Physicians and Apothecaries, all present wan pasteboard figures ; and when grown up, pale complexions and bilious temperaments like their fathers.

In order to render children beautiful, you must render them physically, but above all morally happy. You must prevent every possible occasion of vexation to them, not by kindling in their breasts dangerous and headstrong passions, as in the case of spoiled children, but on the contrary by teaching them to curb such as they have from Nature, and which society is ever exciting into a state of fermentation ; and especially by guarding against the communication of every thing unnatural, such as useless and irksome tasks, emulations, rivalry, and the like. But we shall resume this important subject at greater length hereafter.

The ugliness of a child is to be imputed, in almost every case, to his nurse or to his preceptor. I have sometimes observed, among so many classes of society more or less disfigured by our institutions, some families singularly beautiful. On en-

quiring into the cause of this, I have found that those families, though of the commonalty, were happier in a moral respect than those of other citizens; that the mothers had suckled their own children; that the young people had learned their occupations under the paternal roof and inspection; that they have been treated with much tenderness and indulgence; that their parents were fondly attached to each other; that they all lived together, notwithstanding the hardships of their low condition, in a state of liberty and cordiality, which rendered them good, happy, and satisfied.*

I have thence deduced this other consequence: That we frequently make a false estimate of the happiness of human life. On seeing here a Gardener with the port of a Roman Emperor; and there a great Lord with the mask of a slave, I imagined at first that Nature had committed a mistake. But experience demonstrates, that the great Lord in question is, from the hour of his birth to that of his death, placed in a series of positions, which permit him not to gratify his own inclination three times a year. For he is under the necessity, from his infancy upward, to do the will, first of his preceptors and masters; in more advanced life, that of his prince, of ministers of state, of his rivals, nay frequently that of his enemies. Thus he finds fetters innumerable in his very dignities. Our Gardener, on the other hand, passes his whole life without being exposed to the slightest contradiction. Like the Centurion in the Gospel, he says to his servant, Come, and he cometh; and to another, Do, this, and he doeth it. This demonstrates that Providence has assigned to our very passions a part widely different from that which society presents to them, for in cases innumerable the most unrelenting slavery is imposed, together with an accu-

* Mr. C. Quillet has published a work entitled *La Callipédie*, or the Art of forming beautiful children. I have not seen this work, and am not, therefore, prepared to say, how far the sentiments of the author are in harmony with those of Saint Pierre. The following is a part of the dedication of this work to the Society of medicine, &c., at Brussels, by Mr. Cailleau, the translator of Quillet's book. "The author (he says) in an admirable work, and with a title apparently frivolous, which, however, fulfils all its promises, has sung in the language of the gods, and always in the presence of the august Minerva, after the example of Homer, and the veteran of Ascera, the most amiable and useful of sciences, the art of rendering the human species perfect, and of uniting a beautiful soul with a beautiful body."—B. S. B.

inulation of honours ; and in the meanest of human conditions we frequently find the possession of the most unbounded empire,

Besides, persons who have been disfigured by the corruptive impression of vicious education and habits have it in their power to reform their looks : and I say this principally for the sake of our females, who, in order to gain this point, apply white and red, and patch up faces, like those of dolls, utterly destitute of character. After all they are in the right ; for it is much better to conceal character altogether, than to exhibit that of the cruel passions which are often preying upon them ; especially to the eyes of so many of the other sex, who study character merely to take the advantage of it. There are infallible means in their power of acquiring a beauty altogether irresistible. It is to be internally good, gentle, compassionate, sensible, beneficent, and devout. These affections of a virtuous soul will impress on their features, characters altogether celestial, which will appear beautiful even to the farthest extremity of old age.

Nay, I will venture so far as to affirm, that the harsher the traits may be in homely persons who have suffered degradation from a faulty education, the more sublime and impressive will be the contrasts produced in them by those which they acquire from habits of virtue ; for when we find goodness under an unpromising exterior, we are as agreeably surprized as at finding violets and primroses under a shrubbery of briars and thorns. Such was the sensation inspired on a first introduction to the crabbed-looking *M. de Turenne* ; and such in our days is that which we feel at the first aspect of a certain northern Prince, as justly celebrated for his goodness, as the King his brother has rendered himself by his victories. I have no doubt that the repelling outside of these two great men may have greatly contributed to give a peculiar prominency to the excellence of their heart. Such too was the beauty of *Socrates*, who, with the features of a profligate, delighted every eye while he discoursed of virtue.

But to no purpose will a man attempt to decorate his countenance with the indications of good qualities to which his heart is a stranger. This false beauty produces an effect still more disgusting than the most decided ugliness ; for when, attracted by an apparent goodness, we actually find dishonesty and perfidy we are seized with horror, as when we find a serpent lurking in

a bed of flowers. Such is the detestable character generally ascribed to courtiers.

Moral beauty then is that after which we are bound to aspire, that it's divine irradiations may be diffused over our features and over our actions. To no purpose will a Prince himself make his boast of high birth, riches, credit, wit; the People in order to know him must look him in the face. The People form their judgment of him entirely from the physiognomy: it is in every country the first, and frequently the last letter of recommendation.

OF CONCERTS.

Concert is an order formed of several harmonies of various kinds. It differs from simple order in this, that the last is frequently nothing but a series of harmonies of the same species.

Every particular Work of Nature presents, in different kinds, harmonies, consonances, contrasts; and forms a real concert. This we shall more amply unfold in the Study which treats of plants. It may henceforward be considered as a well-founded remark on the subject of those harmonies, and of those contrasts, that vegetables whose flowers have the least lustre are frequented by animals of the most brilliant colours; and on the contrary, that the vegetables which are most highly coloured serve as an asylum to the duskiest animals. This is particularly evident in countries situated between the Tropics; where the trees and herbage, which have few if any apparent flowers, lodge and support birds, insects, nay monkeys of the most lively colours. It is in the plains of India that the peacock displays his gaudy plumage, on a shrubbery despoiled of verdure by the burning heat of the Sun. In the same climate it is that the parrot race, consisting of so many different species, enamelled with a thousand various colours, perch on the gray bough of the palm-tree, and that clouds of little paroquets, green as the emerald, alight on fields embrowned by the lengthened heats of Summer.

In our temperate regions, on the contrary, most of our birds are dull-coloured, because most of our vegetables have flowers and fruits with shining colours. It is very remarkable, that such of our birds and insects as have lively colours usually choose for their habitation vegetables that have no apparent flowers. Thus the heath-cock glisters on the gray verdure of

the pine, whose apples serves him for food. The gold-finch builds his nest in the rough fullers-thistle. The most beautiful of our caterpillars, which is marbled with scarlet, is to be found on a species of the tithymal that usually grows in the sands, and amidst the quarries of the forests of Fontainebleau. On the contrary, our birds of dusky hue inhabit shrubbery with gay coloured flowers. The black-headed bullfinch builds his nest in the white-thorn, and that lovely bird exhibits a farther most agreeable consonance and contrast with the prickly shrub where he resides, by his blood-stained breast and the sweetness of his song. The nightingale with brown plumage delights to nestle in the rose-bush, according to the traditions of the oriental Poets, who have founded many a charming fable on the loves of that melancholy bird for the rose.

I could here exhibit a multitude of other harmonies of a similar nature, respecting the animals both of our own and of foreign countries. I have collected these to a very considerable number; but I acknowledge they are too incomplete to admit of my forming of them the entire concert of one plant. I shall however treat the subject more at large under the article of vegetables. It will be sufficient at present to produce a single example, which incontestably proves the existence of those harmonic Laws of Nature: it is this, that they subsist even in places not exposed to the view of the Sun. We always find in the cells of the mole fragments of the bulbous root of the colchica close by the nest of her young. Now let any one examine the plants which usually grow in our meadows, and he will find none which forms more harmonies and contrasts with the black colour of the mole, than the white, impurpled, and lilach flowers of the colchica. This plant likewise furnishes powerful means of defence to the feeble mole against her natural enemy the dog, who is continually hunting after her in the meadows; for he is poisoned if he eats it. For this reason the colchica has obtained the trivial name of dog-bane. The mole then finds a supply of food for her necessities, and a protection against her enemies, in the colchica, as the bullfinch does in the white-thorn. Such harmonies are not only very agreeable objects of speculation, but may be turned to very good practical account; for from what has just been suggested it will follow, that if you wish to allure the bullfinch to your shrubbery, you have only to plant

the white-thorn; and if you would clear your grounds of the mole, exterminate the bulbs of the colchica.

If to each plant are added it's elementary harmonies, such as those of the season when it appears; of the soil and situation in which it vegetates; the effects of the dews, and of the reflexes of the light on it's foliage; the movements which it undergoes from the action of the winds; it's contrasts and consonances with other plants, and with the quadrupeds, the birds, and the insects, which are peculiar to it; and you will perceive a delightful concert formed all around, the harmonies of which are still unknown to us. It is only however by pursuing this track, that we shall be enabled to obtain a glimpse of the immense and magnificent edifice of Nature. I would earnestly intreat Naturalists, persons fond of gardening, Painters, nay Poets likewise, thus to prosecute their studies, and to take frequent draughts from this perennial spring of taste and of delight. They will behold new worlds arising into view, and without removing from their own Horizon, they will make discoveries infinitely more curious than those which are contained in our books and cabinets, where the productions of the Universe are frittered away and disjoined in the petty drawers of our mechanical systems.

I know not at present what name I ought to give to the conformities which those particular concerts have with Man. Certain it undoubtedly is, that there is no Work of Nature but what strengthens it's particular concert, or if you will it's natural character, by the habitation of Man; and which does not communicate in it's turn to the habitation of Man, some expression of grandeur, of gaiety, of terror, or of majesty. There is no verdant mead but what is rendered more cheerful by a dance of shepherdesses and their swains; and no tempest but what acquires additional horror from the shipwreck of a vessel. Nature raises the physical character of her Works to a sublime moral character, by collecting them around mankind. This is not the place to descant at large on the new order of sentiments hereby suggested. I satisfy myself at present with observing, That she not only employs particular concerts to express in detail the characters of her Works, but when she means to express these same characters on the great scale, she combines a multitude of harmonies and of contrasts of the same kind. in order to form of

them one great general concert, which has only a single expression, let the field of representation be ever so extensive.

Thus, for example, in order to express the maleficent character of a venomous plant, she combines in it clashing oppositions of the forms and colours which are the indications of that maleficence ; such as retreating and bristly forms, livid colours, dark greens, with white and black spots, virulent smells....But when she means to characterize a whole district that is unwholesome, she collects a multitude of similar dissonances. The air is loaded with thick fogs, the turbid waters exhale only nauseous smells, no vegetable thrives on the putrid soil but such as are disgusting, the dracunculus, for instance, the flower of which exhibits the form, the colour, and the smell of an ulcer. If any tree arises in the cloudy atmosphere, it is the yew only, whose red and smoky trunk has the appearance of having passed through the fire, and whose gloomy foliage serves as an asylum only to owls. If any other animal is to be found seeking a retreat under it's lurid shade, it is the blood-coloured cantipede, or the toad crawling along the humid and rotten ground. By these, or similar signs, Nature scares Man away from noxious situations.

If she intends to give him at sea the signal of an impending tempest ; as she has opposed in ferocious animals the fiery glare of the eyes to the thickness of the eye-brows ; the stripes and spots with which they are marked to the yellow colour of their skin, and the stillness of their movements to the thundering noise of their voices ; she collects in like manner in the sky, and on the deep, a multitude of clashing oppositions, which in concert announce approaching devastation. Dark clouds sweep through the air in the horrible forms of dragons. Here and there the pale fire of lightning bursts from the gloom ; the noise of the thunder, with which their dark womb is impregnated, resounds like the roaring of the celestial lion. The Orb of Day, who can scarcely render himself visible through their rainy and multiplied veils, emits long radiations of wan and sickly light. The leaden surface of the Ocean sinks and swells into broad white foaming surges. A hollow murmuring noise seems to issue from those threatening billows. The black shallows whiten at a distance with horrid sounds, from time to time interrupted by ominous silence. The Sea, which alternately covers and reveals them, displays to the light of day their cavernous founda-

tions. The Norwegian lom perches on one of their craggy points, uttering lamentable cries, like those of a drowning man. The sea-ospray rises aloft in the air, and not daring to commit herself to the impetuosity of the winds, struggles with a plaintive screaming voice against the tempest, which bends back her stubborn wings. The black procellaria flutters about, grazing the foam of the waves, and seeks in the cavity of their moving valleys a shelter from the fury of the winds. If this small and feeble bird happens to perceive a ship in the midst of the Sea, he flees for refuge along her side, and as a reward for the protection which he solicits, announces the tempest to the mariner before it overtakes him.

Nature uniformly proportions the signs of destruction to the magnitude of the danger. Thus, for example, the signs of tempest off the Cape of Good-Hope far exceed those on our coasts. The celebrated *Vernet*, who has exhibited so many terrifying representations of the Sea, is far from having depicted all the horrors of the watery element. Every storm has it's peculiar character, and in every particular latitude. Far different are the storms off the Cape of Good-Hope from those off Cape Horn ; those of the Baltic from those of the Mediterranean ; those on the banks of Newfoundland from those on the coast of Africa. They farther differ according to the season of the year, and even according to the hour of the day. Those of Summer are very unlike those of Winter ; and widely different is the spectacle of an enraged sea, shining at noon-day under the rays of the Sun, and that of the same sea illuminated at the midnight hour by a single flash of lightning. But you perceive in all the clashing oppositions of which I have made mention.

I have remarked one thing in the tempests off the Cape of Good-Hope, which strikingly supports all that I have hitherto advanced respecting the principles of discord and harmony ; and which may perhaps suggest profound and useful reflection to some one of greater ability than I can pretend to. It is this, That Nature frequently accompanies the signs of the disorder which agitates the Ocean with agreeable expressions of harmony, that serve only to redouble the horrors of the scene.

Thus, for example, in two different storms to which I was exposed in those seas, I did not see the face of Heaven obscured by dark clouds, nor these clouds furrowed by alternate flashes

of lightning, nor a sea muddy and lead-coloured, as in the tempests of our climates. The sky, on the contrary, presented a fine blue, and the sea a beautiful azure; there were no other clouds hovering in the air but small aggregations of a ruddy vapour, dark toward the centre, and illuminated about the extremities with the yellow lustre of burnished brass. They took their departure from a single point in the Horizon, and travelled across the Heavens with the rapidity of a bird flying. When the thunder shivered in pieces our main-mast in the middle of the night, it did not roll; and emitted only a crack resembling that of a cannon shot off close by us. Two other thunder-claps which had preceded this one, were exactly similar. This was in the month of June, which is mid-winter at the Cape of Good-Hope.

I was caught in another storm when doubling the Cape, on my return in the month of January, which is mid-summer in that part of the world. The ground of the Heavens was blue, as in the first, and not above five or six clouds were perceptible above the Horizon; but each of them white, black, cavernous, and of an enormous magnitude, resembled a portion of the Alps suspended in the air. This last was much less violent than the former, with its small ruddy vapours. In both the sea was of the same beautiful azure colour with the sky; and on the curling crests of the vast billows, rushing like so many cascades, were formed bright coloured rainbows.

These tempests, in the full blaze of light, are inexpressibly tremendous. The soul stands aghast at sight of the indications of tranquillity converted into signs of storm; the unclouded azure in the Heavens, and the rainbow playing upon the waves. The principles of harmony appeared to be completely inverted. Nature seemed to have put on a character of perfidiousness, and to conceal fury under the mask of benevolence.

The shallows of those Latitudes exhibit similar contrasts. *John Hugo de Linschoten*, who saw those of the Jewess at no great distance, in the Mosambique channel, and upon which he was in extreme danger of making shipwreck, informs us, that they have a most hideous aspect, being black, white, and green. Thus Nature increases the characters of terror, by intermingling with them certain agreeable expressions.

There is a farther observation of essential importance to be made in this place ; namely, That in those awful scenes of danger and affright, the terrible is close upon you, and the agreeable is removed to an immense distance ; tumult is in the seas, and serenity in the sky. A prodigious extension is thus given to the sentiment of disorder ; for there is no apparent boundary set to tempests of this sort. All depends on the first impulsion which we undergo. The sentiment of infinity that is within us, and which is ever making new efforts to propagate itself farther and farther, seeks to make it's escape from the physical evil wherewith it is surrounded ; but repelled in some sort by the serenity of the treacherous Horizon, falls back upon itself and undergoes a severer pang, under the pressure of present painful affections, because their source has the appearance of being invariable.

Such is the Giant of Storms, stationed by Nature at the entrance of the Seas of India, and so well delineated by the pencil of *Camoens*. Nature in our climates produces quite contrary effects ; for during Winter she redoubles our repose within doors, by covering the face of Heaven with dark and rainy clouds. All depends, as I have just said, on the first impulsion which the soul receives. *Lucretius* is undoubtedly right in saying, that our pleasure and security on shore are greatly increased by the sight of a storm at sea.

A Painter accordingly, who wished to strengthen in a picture the effect of a beautiful landscape, and the felicity of it's inhabitants, would only have to represent in the back-ground a vessel at the mercy of the winds and of the raging deep : the happiness of the shepherds would in this case be powerfully heightened by contrast with the distress of the mariners. But if it were his intention, on the contrary, to augment the horrors of a tempest, it would be necessary for him to place in opposition to the distress of the mariners, the felicity of the shepherds ; and, for this effect, the vessel must be introduced between the spectator and the landscape. The first sentiment depends on the first impulsion ; and the ground contrasting with the scene is so far from being a deviation from Nature, that the leading object is impressed with additional energy by being thrown back upon itself. Thus it is possible, with the same objects placed differently, to produce directly opposite effects.

If Nature, by introducing certain agreeable harmonies into scenes of discord, redoubles their confusion, such as the green colour of the rocks of the Jewess, or the azure in the tempests off the Cape, she frequently throws in a discordance, in concerts the most delightful, for the purpose of heightening the pleasurable effect. Thus a noisy water-fall precipitating itself into a tranquil valley, or a rugged and dusky rock ascending in the midst of a verdant plain, enhances the beauty of a landscape. Thus a mole on a beautiful face gives it additional vivacity. Skilful Artists have sometimes happily imitated those harmonic contrasts. *Callot*, when he intended to aggravate the horror of his infernal scenery, introduced amidst his demons the head of a fine woman on the carcase of an animal. On the contrary, the most renowned Grecian Painters, in order to render *Venus* more interesting, represented her with a slight squint in her eyes.

Nature employs offensive contrasts only for the purpose of chasing Man from some perilous situation. In all the rest of her Works she employs only harmonic mediums. I must not involve myself in the examination of their different concerts; it is a subject whose riches are inexhaustible. All that could be expected from my scanty fund was the indication of a few of their principles. I shall endeavour, however, to trace a slight sketch of the manner in which she harmonizes the common fields of our harvests, these, being the production of human agriculture, seem abandoned to the monotony that characterizes most of the Works of Man.

First of all, it is remarkable that we here find that charming shade of green, produced by the alliance of the two primordial opposite colours, which are the yellow and the blue. This harmonic colour decompounds itself in its turn by another metamorphosis, towards the time of the harvest, into the three primordial colours, namely, the yellow of the ripening corn, the red of the wild poppy, and the azure of the blue-bottle. These two plants are found intermingled with the standing corn all over Europe, let the farmer take what pains he may in sifting the grain and in weeding his field. They form by their harmony a very rich purple tint, which rises admirably on the yellow ground of the corn-field.

If you study these two plants separately, you will find between them a variety of particular contrasts; for the blue bot-

tle has narrow and slender leaves; but those of the poppy are broad, with deep incisions. The blue-bottle* has the corolla of it's flowers radiating, and of a delicate azure; but those of the poppy are large, and of a deep red. The blue-bottle throws out divergent stalks; but those of the poppy are straight. We find, besides, among the corn, the cockle or corn-rose, which rises to the height of the expanded ear, with handsome purple flowers in form of a trumpet; and the convolvulus with a flesh-coloured flower, crawling up along the reeds, and surrounding them with verdure like a thyrus. There is a great variety of other vegetables usually to be found growing among corn, and forming contrasts the most agreeable, most of them exhale the sweetest perfumes; and when agitated by the Summer's breeze, you will be disposed from their undulations to imagine the whole a sea of verdure enamelled with flowers. Add to all the rest a gentle rustling of the ears against each other, most agreeably soothing, which by it's soft murmuring sound invites to sleep.

These lovely forests of vegetable beauty are not destitute of inhabitants. You see bustling about under their shade, the green coated scarab, streaked with gold, and the monoceros of the colour of burnt coffee. This last insect takes delight in a hillock of horse-dung, and is furnished with a ploughshare on it's head, with which he removes the ground like a labourer. There are besides a variety of charming contrasts in the bees and the butterflies, which are attracted by the flowers of the corn-field, and in the manners of the birds which inhabit them. The far-travelled swallow is continually skimming along their surface, undulating like the waters of a lake; whereas the stationary lark towers above them in a perpendicular direction, within sight of her nest. The domesticated partridge and transitory quail, there find a situation equally favourable to both for

* He does not mean the plant frequently called in the United States blue-bottle, which is a species of Hyacinth; but the corn blue-bottle of the English, which is the *centaurea cyanus* of the botanists. Saint Pierre would have been pleased to have known of the attachment to this plant of various species of American birds, whose colours are sometimes in beautiful harmony, and sometimes in equally beautiful contrast, with the colours of the flowers of the blue-bottle. I think none of our birds so frequently perch upon the *cyanus*, as the *frigilla tristis*, whose colour is nearly one uniform yellow; and hence called the yellow bird.—B. S. B.

rearing their young. The hare frequently burrows in their neighbourhood, and quietly nibbles the wild-thistle.

These animals have with Man relations of utility, from their fruitfulness and their furs. It is remarkable that they are to be found over all the corn-districts of Europe, and that their species are varied according to all the variety of human habitation; for there are different species of quails, partridges, larks, swallows, and hares, adapted to the plains, to the mountains, to the heaths, to the meadows, to the forests, and to the rocks.

As to the corn-plant itself, it has relations innumerable with the wants of Man and of his domestic animals. It is neither too high nor too low for his stature. It is easily handled and reaped. It furnishes grain to his poultry, bran to his pigs, forage and litter to his black cattle and his horses. Every plant that grows in his corn-field possesses virtues particularly adapted to the maladies incident to the condition of the labouring man. The poppy is a cure for the pleurisy; it procures sleep; it stops hemorrhages and spitting of blood. The blue-bottle is a diuretic; it is vulnerary, cordial and cooling; it is an antidote to the stings of venomous insects, and a remedy for inflammation of the eyes. Thus the husbandman finds all needful pharmacy in the field which he cultivates.

The culture of this staff of life discloses to him many other agreeable concerts with his fleeting existence. The direction of it's shadow informs him of the hour of the day; from it's progressive growth he learns the rapid flight of the seasons: he reckons the flux of his own fugitive years by the successions of the guiltless harvests which he has reaped. He is haunted with no apprehension, like the inhabitants of great cities, of conjugal infidelity, or of a too numerous posterity. His labours are always surpassed by the benefits of Nature. When the Sun gets to the sign of Virgo, he summons his kindred, he invites his neighbours, and marches at their head by the dawning of the day, with sickle in hand, to the ripened field. His heart exults with joy as he binds up the swelling sheaves, while his children dance around them, crowned with garlands of blue-bottles and wild poppies. The harmless play recalls to his memory the amusements of his own early days, and of his virtuous ancestors, whom he hopes at length to rejoin in a better and happier World. The sight of his copious harvest demonstrates to him

that there is a GOD; and every return of that joyous season, bringing to his recollection the delicious eras of his past existence, inspires him with gratitude to the Great Being who has united the transient society of men by an eternal chain of blessings.

Ye flowery meadows, ye majestic, murmuring forests, ye mossy fountains, ye desert rocks, frequented by the dove alone, ye enchanting solitudes, which charm by your ineffable concerts; happy is the man who shall be permitted to unveil your hidden beauties! but still happier far is he who shall have in his power calmly to enjoy them in the inheritance of his forefathers!

OF SOME OTHER LAWS OF NATURE HITHERTO IMPERFECTLY
KNOWN.

There are, besides those which have been mentioned, some physical Laws not hitherto profoundly investigated, though we have had a glimmering of them, and made them the frequent subject of conversation. Such is the Law of attraction. It has been acknowledged in the planets, and in some metals, as in iron and the load-stone, in gold and mercury. I believe attraction to be common to all metals, and even to all fossils; but that it acts in each of them in particular circumstances, which have not hitherto been observed and ascertained. Each of the metals, perhaps, may have a disposition to turn toward different parts of the Earth, as magnetic iron points toward the North, and toward places where there are mines of iron. It would probably be necessary, in order to ascertain this by experiment, that each metal should be armed with it's proper attraction; this takes place, as I think, when it is united to it's contrary.

How do we know whether a needle of gold, rubbed with mercury, might not have attractive poles, as a needle of steel has when rubbed with the magnet? Thus prepared, or in some other way adapted to it's nature, it might possibly indicate the places which contain mines of that rich metal. Perhaps it might determine the general points of direction to the East or to the West, which might serve as an indication of the Longitudes more steadily than the variations of the magnetic needle.

If there be a point at the Pole on which the Globe seems to revolve, there may possibly be one under the Equator from which it's rotatory motion has commenced, and which may have

determined it's motion of rotation. It is very remarkable, for example, that all seas are filled with univalve shell-fish, of an infinity of very different species, which all have their surrounding spirals in an increasing progression; and in one and the same direction, that is from left to right, like the motion of the Globe when the mouth of the shell is turned northward, with the base to the ground. There is only a very small number of species which may be considered as exceptions, and which have, for this very reason, been denominated *unique* (singular or extraordinary). The spirals of these circulate from right to left.

A direction so general and exceptions so particular in univalve shell-fish, undoubtedly have their causes in Nature, and their epochas in the unknown ages when their germs were created. It is impossible that they should proceed from the actual influence of the Sun, who acts on them in a thousand different aspects. Can they have been thus directed in a conformity to some general Current of the Ocean, or to some unknown attraction of the Earth, toward the North or the South, toward the East or the West? These relations will appear strange, and perhaps frivolous to our men of Science; but every thing in Nature is a series of concatenation. A slight observation here in many cases leads to important discovery. A small plate of iron turning toward the North guides a whole Navy through the deserts of the Ocean: and a reed of an unknown species, thrown on the coast of the Azores, suggested to *Christopher Columbus* the existence of a western World.

Whatever may be in this, certain it is that there exists a great number of those particular points of attraction scattered over the Earth, such as the matrices which renovate the mines of metals by attracting to themselves the metallic parts dispersed in the elements. It is by means of attractive matrices that those mines are inexhaustible, as has been remarked in many places, among others in the Isle of Elba situated in the Mediterranean. This little island is entirely a mine of iron, from which had been already extracted, in the time of *Pliny*, an immense quantity of that metal, without it's being perceptible, as he tells us, that it was in the smallest degree diminished. Metals have besides other attractions; and if I might presume to deliver my opinion by the way, I consider these themselves as the principal matrices of all fossil bodies, and as the ever active means employed by

Nature for repairing the mountains and the rocks, which the action of the other elements, but especially the injudicious labours of men, have an incessant tendency to impair.

I shall here remark on the subject of mines of gold, that they are placed, as well as those of all metals, not only on the most elevated part of Continents, but in icy mountains.

The celebrated gold mines of Peru and of Chili are, it is well known, in the Cordeliers. The gold mines of Mexico are situated in the vicinity of Mount St. Martha, which is covered with snow all the year round. The rivers of Europe, which wash down particles of gold along their shores, issue from icy mountains. The Po in Italy has it's source in those of Piedmont. But without quitting France, we reckon ten greater or smaller rivers which roll along gold-dust intermingled with their sands, and which have all of them their origin in mountains of ice. Such is the Rhine from Strasburg to Philipsburg ; the Rhone in the Pais de Gex ; the Doux in Franche-Comte ; which three all take their rise in the icy mountains of Switzerland. The Cese and the Gardon descend from those of the Cevennes. The Ariege in the Pais de Foix ; the Garonne in the vicinity of Thoulouse ; the Salat in the County of Conserans ; and the rivulets of Ferriet and Benagues all take their rise in the icy mountains of the Pyrennées.

This observation may be extended, I believe, to all the gold mines in the World, even to those of Africa, such of whose rivers as wash down the greatest quantities of gold dust, the Senegal for instance, descend from the mountains of the Moon.

To this it might be objected, that gold was formerly found in Europe in places where there were no icy mountains ; nay, that some has been picked up on the surface of the ground, as in Brasil ; and not many years ago that there was found an ingot, or mass of several pounds weight, on the bank of a river in the district of Cinaloa, in New-Mexico. But if I might venture to hazard a conjecture respecting the origin of this gold, scattered about on the surface of the earth, in the ancient Continent of Europe, and especially in that of the New-World, I believe it to have proceeded from the total effusions of the ices of the mountains which took place at the time of the Deluge ; and that as the spoils of the Ocean covered the western parts of Europe, that those of vegetable earths were spread over the eastern part

of Asia, those of minerals from the mountains were forced along other countries, where their fragments were found in the earlier ages, in grains, and even in larger masses.

This much is certain, that when *Christopher Columbus* discovered the *Lucayo* and *Antilles* islands, he found among those islanders abundance of gold of a base alloy, the produce of the traffic which they had carried on with the inhabitants of the Continent; but they had no mines within their own territory, notwithstanding the prejudice then entertained, and under which many labour to this day, that the Sun formed this precious metal in the earth of the *Torrid Zone*. For my own part, I find as I have just observed, gold much more common in the vicinity of icy mountains, whatever their Latitude may be; and I conjecture from analogy, that there must be very rich mines of it in the North. It is extremely probable, that the waters of the Deluge hurled along considerable portions of that metal to the northern countries.

We read, I think, in the Book of Job the Arabian, this remarkable expression: "Gold cometh from the North."* Certain it is, that the first commerce of India with Europe was carried on by the North, as has been clearly demonstrated by the Baron *de Strahlenberg*, a Swedish exile, after the battle of Pultowa, in Siberia, of which he has given a very sensible and accurate description. He says, that it is still possible to pursue, by evident traces, the track of the ancient Indians along the river of *Petzora*, which empties itself into the *White Sea*. On it's banks in various places are found many of their tombs, which contain some of them manuscripts on silk stuffs, in the language of *Thibet*; and there are perceptible on the rocks along it's shores, characters which they have traced upon them in a red which cannot be effaced. From this river they forced their way through the lakes, by means of leather boats, to the *Baltic*; or coasted along the northern and western shores of Europe.

* This is not entirely of a piece with our Author's usual accuracy. It is written indeed in the Book of Job, chap. xxxvii. ver. 9, "*Cold* cometh out of the North:" and ver. 22, "*Fair weather* cometh out of the North:" but no where in Scripture, so far as I know, is this affirmed of *Gold*. *St. Pierre* seems to have quoted from general and indistinct recollection; happy no doubt to have, as he thought, a text from the Bible to support his conjecture. But, notwithstanding this defect, his reasoning is plausible and the human testimony which he adduces respectable.—H. H.

This track was known to the Indians even from the time of the ancient Romans ; for *Cornelius Nepos* relates, that a King of the Suevi made a present to *Metellus Celer* of two Indians, who had been thrown by stress of weather, with their leathern canoc, on the coasts adjacent to the mouth of the Elbe. It is not easy to conceive what those Indians, the inhabitants of a warm country, were going in quest of so far to the North. What use could they have made in India of the furs of Siberia? It would appear they went thither in search of gold, which might then be frequently discoverable to the North at the surface of the earth.

Whatever may be in this, it is presumable that, as mines of gold are placed in the most elevated regions of the Continent, their matrices collect in the Atmosphere the volatilized particles of gold, which ascend thither with the fossil and aquatic emanations, conveyed by the winds from every quarter. But they exercise over men attractions still much more powerful.

It would appear as if Nature, by burying the focuses of this rich metal under the snows, had intended to fence it with ramparts still more inaccessible than the flinty bosom of the rock, lest the undismayed ardor of human avarice should at length destroy them entirely. It has become the most powerful bond of Society, and the perpetual object of all the labours of a life so rapidly hurrying to a close. Alas ! were Nature at this day to inflict condign punishment on this insatiable thirst in the Nations of Europe, for a metal so useless as a real necessary of human life, she has only to change the territory of some one of them into gold. Every other nation would instantly flock thither, and in a little time exterminate it's wretched inhabitants. The Peruvians and Mexicans have had the dreadful experience of this.

There are metals not so highly prized but much more useful, the elementary attractions of which might perhaps procure us very important accommodations.

The peaks of the mountains and their lengthened crests, are filled, as we have seen, with iron or copper, intermingled with a vitreous body of granite, or of natural crystal, which attracts the rains and the stormy clouds like so many real and electric needles. There is not a seaman but what has a thousand times seen those peaks and those crests covered with a cloudy cap,

gathered round and round, and concealing them entirely from view, without once suspecting the cause of this appearance. Our Philosophers, on the other hand, deducing their conclusions merely from the inspection of charts, have taken those rocky protuberances for the wrecks of a primitive earth, without giving themselves any trouble about their effects.

They ought to have observed, that those metallic pyramids and crests, as well as most mines of iron and copper, are always to be found in elevated situations, and at the source of all rivers, of which they are the primitive causes by means of their attractions. Their general inattention to this subject is thus only to be accounted for; seamen observe, and do not reason; and the learned reason, but do not observe. Undoubtedly had the experience of the one been united to the sagacity of the other, prodigies of discovery might have been expected.

I am persuaded that, in imitation of Nature, it might be possible for us to acquire the art of forming, by means of electric stones, artificial fountains, which should attract the rainy clouds in parched and dry situations, as chains and rods of iron attract thunder-clouds. It is true that Princes must be at the expense of such costly and useful experiments; but it is the way for them to immortalize their memory. The *Pharaohs*, who built the pyramids of Egypt, would not have drawn upon themselves the curses of their subjects, as *Pliny* assures us they did, for their enormous and useless labours, had they reared amidst the sands of Upper Egypt an electrical pyramid, which might there have formed an artificial fountain. The Arab who should resort thither at this day to quench his thirst, would still pronounce benedictions on names which, if we may believe the great Natural Historian, had already sunk into oblivion, and ceased to be mentioned in his time.

For my own part, I think that several metals might be proper for producing similar effects. An officer of high rank, in the service of the King of Prussia, informed me that having remarked vapors to be attracted by lead, he had employed it's attraction for drying the atmosphere of a powder-magazine. This magazine was constructed under ground in the throat of a bastion, but had been rendered of no use whatever from it's humidity. He ordered to line with a coat of lead the concave ceiling of the arch, which was before planked over where the gunpowder

was deposited in barrels : the vapors of the vault collected in great drops on the leaden roof, run off in streamlets along the sides, and left the gunpowder barrels perfectly dry.

It is to be presumed that every metal and every fossil has it's peculiar repulsion as well as it's attraction ; for these two Laws always go hand in hand. Contraries seek out each other.

There are farther a multitude of other harmonic Laws as yet undiscovered ; such are the proportions of magnitudes, and of the durations of existence, in beings vegetative and sensible, which differ exceedingly, though their nutriment and climates may be the same. Man, while yet a youth, sees the dog his companion and contemporary die of old age ; and also the sheep which he fondled when a lamb. Though the former lived at his own table, and the other on the herbage of his meadow, neither the fidelity of the one nor the temperance of the other could prolong their days ; whereas animals which live only on carrion and garbage live for ages, as the crow. It is impossible to guide ourselves in prosecuting such researches any other way than by following the spirit of conformity, which is the basis of our own reason, as it is that of the reason of Nature.

By consulting this we shall find, that if such and such a carnivorous animal is long-lived, as the crow for instance, it is because his services and his experience are long necessary for purifying the earth, in places whose impurities are incessantly renewing, and which are frequently at great distances from each other. If, on the contrary, an innocent animal lives but a little while, it is because his flesh and his skin are necessary to Man. If the domestic dog by his death frequently diffuses sorrow over the children of the family, whose intimate friend and fellow-boarder he was, Nature undoubtedly intended to give them, in the loss of an animal so worthy of the affections and the regret of the heart of Man, the first experience of the privations with which human life is to be exercised.

The duration of an animal's life is sometimes proportioned to the duration of the vegetable on which it feeds. A multitude of caterpillars are born and die with the leaves by which their transitory existence is supported. There are insects whose being is limited to five hours : such is the cphemera. This species of fly, about half as large as the tip of the little finger, is produced from a fluviatric grub which is found particularly at

the mouths of rivers close by the water's edge, in the mud, into which it digs in quest of subsistence. This grub lives three years, and at the termination of that period, about Midsummer-day, it is transformed almost instantaneously into a fly, which comes into the world at six o'clock in the evening and dies about eleven at night. No longer space of time is necessary for copulation, and for depositing the eggs on the mud which the water has deserted.

It is very remarkable that this insect copulates, and lays her eggs precisely at the time of the year when the tides are at the lowest, when the rivers discover at the place of their discharge the greatest part of their channel dry. Wings are then furnished, to enable her to go and deposit her eggs in places which the waters forsake, and to extend in the capacity of a fly the domain of her posterity, at the time when as a worm her territory is most contracted. I have likewise remarked, in the microscopic drawings and dissections given of this insect by the ingenious *Thevenot*, in the last part of his collection, that in her fly state she has neither interior nor exterior organs of nutrition. They would have been entirely useless to a life of such transient duration.

Nature has made nothing in vain. It is not credible that she should have created momentary lives, and beings infinitely minute, to fill up imaginary chains of existence. The Philosophers who ascribe to her these pretended plans of universality, which are destitute of every shadow of proof, and which make her descend into the infinitely small, for purposes equally frivolous, would represent her as acting somewhat like a mother, who gives as toys to amuse her children tiny coaches, and minute articles of household furniture of no use in the world, but which are imitations of domestic utensils.

The aversions and the instincts of animals emanate from Laws of a superior order, which we shall never be able to penetrate into in this world; but supposing those intimate conformities to elude our researches, they must be referred like every other to the general conformity of beings, and especially to that of Man. There is nothing so luminous in the study of Nature, as to refer every thing that exists to the goodness of GOD, and to the demands of humanity. This method of viewing objects not only discovers to us a multitude of unknown laws, but it sets

bounds to those which we do know, and which we believe to be universal.

If Nature, for example, were governed by the Laws of attraction only, according to the supposition of those who have made it the basis of so many systems, every thing in the world would be in a state of rest. Bodies tending toward one common centre would there accumulate, and arrange themselves round it in the ratio of their gravity. The substances which compose the Globe would be so much heavier as they approached nearer to the centre, and those which are at the surface would all be reduced to a level. The bason of the Seas would be choked with the wrecks of the Land ; and this magnificent architecture, formed of harmonies so various, would soon become an aquatic Globe entirely. All bodies hurled downward by one common precipitation, would be condemned to an everlasting immobility.

On the other hand, if the Law of projection, which is employed for explaining the motions of the heavenly bodies, on the supposition that they have a tendency to fly off in the tangent of the curve which they describe ; if, I say, this Law predominated, all bodies not actually adherent to the Earth would be hurled from it like stones from a sling : our Globe itself, subjected to this Law, would fly off from the Sun never to return. It would sometimes traverse in it's unbounded career the spaces of immensity, where no star would be perceptible during the course of many ages ; sometimes swinging through regions where chance might have collected the matrices of Creation, it might pass along amidst the elementary parts of suns, aggregated by the central Laws of attraction, or scattered about in sparks and in rays by those of projection.

But on the supposition that these two contrary forces were combined happily enough in favour of the Globe, to fix it with it's vortex in the corner of the firmament, where these forces should act without destroying themselves, it would present it's Equator to the Sun with as much regularity as it describes it's annual course round him. From those two constant motions never could be produced that other motion so varied, by which it daily inclines one of it's Poles toward the Sun, till it's axis has formed on the plane of it's annual circle an angle of twenty-three degrees and an half ; then that other retrograde motion.

by which it presents to him with equal regularity the opposite Pole. Far from presenting to him alternately it's Poles, in order that his fertilizing heat may by turns melt their ices, it would retain them buried in eternal night and winter, with a part of the Temperate Zones, whereas the rest of it's circumference would be burnt up by the too constant fires of the Tropics.

But if we suppose, together with those constant Laws of attraction and projection, a third variable Law, which gives to the Earth the movement that produces the seasons, and a fourth which gives it the diurnal motion of rotation round itself; and that no one of these Laws so opposite, should ever surpass the others, and at last determine it to obey but one single impulsion; it would be impossible to affirm that they had determined the forms and movements of the bodies which are on it's surface. First, the force of projection or centrifugal, would not have left upon it any one detached body. On the other hand, the force of attraction or gravity would not have permitted the mountains to rise, and still less the metals, which are the heaviest part of them, to be placed at their summits, where they are usually found.

If we suppose that those Laws are the *ultimatum* of chance, and that they are so combined as to form among themselves but one single Law; for the same reasons that they make the Earth move round the Sun, and the Moon round the Earth, they ought to act in the same manner on the particular bodies which are at the surface of the Globe. We ought to see the rocks detached, the fruits separated from the trees, the animals which are not provided with claws turning round it in the air, as we see the particles which compose *Saturn's* ring turn round that Planet.

It is the gravity, they repeat, which acts only at the surface of the Globe, that hinders bodies to detach themselves from it. But if it there absorbs the other powers, Wherefore, as we have already asked, did it permit the mountains to rise? How comes it that the centrifugal force should have been able to exalt to a prodigious height the long ridge of the Cordeliers, while it has left immovable the volatile scurf of snow which covers them? For what reason, if the action of gravity is still universal, has it no influence on the soft bodies of animals, when, shut up in the womb of the mother or in the egg, they are in a state of

fluidity? All the numerous progeny of the Earth, animals and vegetables, ought to be rounded into balls like their mother. The weightiest parts of their bodies at least ought to be situated undermost, especially in those which possess self-motion; on the contrary they are frequently uppermost, and supported by limbs much lighter than the rest of the animal, as in the case of the horse and the ox. Sometimes they are between the head and the feet, as in the ostrich; or at the extremity of the body, in the head, as in the human species. Others, such as the tortoise, are flattened; others, such as reptiles, are drawn out of spindles; all of them, in a word, have forms infinitely varied.

Vegetables themselves, which seem entirely subjected to the action of the elements, have configurations diversified without end. But how comes it that animals have in themselves the principles of so many motions, so entirely different? Wherefore has not gravity nailed them down to the surface of the Earth? They ought to crawl along it at most. How comes it to pass that the Laws which regulate the course of the Stars; those Laws whose influence has in modern times been made to extend even to the operations of the human soul, should permit the birds to rise into the air, and fly as they please to the West, to the North, to the South, notwithstanding the united powers of the attraction, and of the projection of the Globe?

It is conformity, adaptation to use, which has regulated those Laws, and which has generalized or suspended their effects in subordination to the necessities of sensible beings. Though Nature employs an infinity of means, she permits Man to know only the end which she has in view. Her Works are subjected to rapid dissolutions; but she always suffers him to perceive the immortal consistency of her plans. It is on this she wishes to fix his heart and mind. She aims not at rendering Men ingenious and proud; her object is to render him good and happy. She universally mitigates the evils which are necessary; and universally multiplies blessings in many cases superfluous. In her harmonies, formed of contraries, she has opposed the empire of death to that of life; but life endures for a whole age, and death only an instant. She allows Man long to enjoy the expansions of beings so delightful to behold; but

conceals from him, with a precaution truly maternal, their transient states of dissolution.

If an animal dies, if plants are decomposed in a morass, putrid emanations, and reptiles of a disgusting form, chase us away from them. An infinite number of secondary beings are created for the purpose of hastening forward the decompositions. If cavernous mountains and rocks present appearances of ruin; owls, birds of prey, the ferocious animals, which have made them their retreat, keep us at a distance from them. Nature drives far from us the spectacles and the ministers of destruction, and all ures us to her harmonies. She multiplies them in subserviency to our necessities, far beyond the Laws which she seems to have prescribed to herself, and beyond the measure which we had reason to expect. It is thus that the dry and barren rocks repeat by their echoes the murmuring sound of the waters and of the forests; and that the plane surfaces of the waters, which have neither forests nor hills, represent their colours and forms by reflecting them.

From a profusion of this unbounded benevolence of Nature it is, that the action of the Sun is multiplied wherever it was most necessary; and is mitigated in all the places where it would have been hurtful. First, the Sun is five or six days longer in our northern Hemisphere, because that Hemisphere contains the greatest part of the Continents, and is the most inhabited. His disk appears in it before he rises, and after he is set; which, added to it's twilights, considerably increases the natural length of our days. The colder that it is the farther does the refraction of his rays extend. This is the reason that it is greater in the morning than in the evening, in Winter than in Summer, and at the beginning of Spring than at the beginning of Autumn.

When the Orb of the Day has left us, during the night season, the Moon appears to reflect his light upon us, with varieties in her phases which have relations, hitherto unknown, to a great number of species of animals, and especially of fishes, which travel only in the night-time, at the epochas which she indicates to them. The farther that the Sun withdraws from one Pole, the more are his rays refracted there. But when he has entirely abandoned it, then it is that his light is supplied in a most wonderful manner. First the Moon, by a movement al-

together incomprehensible, goes to replace him there, and appears perpetually above the Horizon, without setting, as was observed in the year 1596, at Nova Zembla, by the unfortunate Dutchmen who wintered there, in the 76th degree of North Latitude.

It is in those dreadful climates that Nature multiplies her resources, in order to bestow on sensible beings the benefits of light and heat. The Heavens are there illuminated with the *aurora-borealis*, which darts up to the very zenith rays of moving light, gold-coloured, white, and red. The Poles sparkle with stars more luminous than those which appear in the rest of the firmament. The snows which cover the ground shelter part of the plants, and by their lustre dispel the darkness of night. The trees are clothed with thick mosses, which catch fire from the smallest spark: the very ground is covered with them, especially in the woods, to so great a depth, that I have oftener than once sunk in the Summer time up to the knees, in those of Russia: Finally, the animals which inhabit those regions are robed in fur to the very tip of their claws.

When the season returns for restoring heat to those climates, the Sun re-appears there a considerable time before his natural term. Thus, the Dutch mariners whom I have just mentioned, saw him to their astonishment above the Horizon of Nova Zembla, on the twenty-fourth of January, that is fifteen days sooner than they expected him. This return, so much earlier than their hopes had fashioned it, filled them with joy, and disconcerted the calculations of their intelligent pilot, the unfortunate *Barents*.

It is then that the Star of Day there redoubles his heat and his light, by means of the parhelions, which like so many mirrors formed in the clouds reflect his disk upon the Earth. He calls from Africa the winds of the South, which passing over Zara, whose sands are then violently heated by the vicinity of the Sun to their zenith, load themselves with igneous particles, and proceed to attack like battering rams of fire, that tremendous cupola of ice which covers the extremity of our Hemisphere. It's enormous vaultage, dissolved by the heat of those winds and loosened by their violent agitations detaches itself in fragments as lofty as mountains; and floating at the discretion of the Currents, which sweep them along toward the Line, they

advance sometimes as far to the 45th degree, cooling the Seas of the South by their vast effusions. Thus the ices of the pole communicate coolness to the heated seas of Africa, just as the burning sands of Africa transmit warm winds to dissolve the ices of the Pole.

But as cold is in it's turn a very great blessing in the Torrid Zone, Nature employs a thousand methods to extend the influence of it in that Zone, and to mitigate in it the heat and the light of the Sun. First, she destroys there the refractions of the Atmosphere. There is scarcely any twilight between the Tropics to precede the rising of the Sun, and still less after his setting. When he is in the Zenith he veils himself with rainy clouds, which cool the ground both by their shade and by their showers. Besides those clouds being frequently impregnated with thunder, the explosion of their fires dilates the superior stratum of the Atmosphere, which is icy at the height of two thousand five hundred fathom under the Line, as is evident from the snows which perpetually cover at that height the summits of some of the Cordelier mountains. They cause to flow down, by their explosions and concussions, columns of that air, congealed in the superior regions of the Atmosphere, into the inferior, which are suddenly cooled by it, as we feel it to be in our own climates in Summer, immediately after a thunder storm.

The effusions of the polar ices in like manner cool the seas of the South; and the polar winds frequently blow on the hottest parts of their shores. Nature has farther placed in the very heart of the Torrid Zone and in it's vicinity, chains of icy mountains, which accelerate and redouble the effects of the polar winds, especially along the seas, where fermentation was most to be dreaded, from the alluvions of the bodies of animals and of vegetables, which the waters are there continually depositing. Thus the chain of Mount Taurus, eternally covered with snow, commences in Africa, on the burning shores of Zara, and coasting the Mediterranean, passes on into Asia, where it extends long arms this way and that, which embrace the gulfs of the Indian Ocean. In America, in the same manner, the extensive chains of the Cordeliers of Peru and Chili, with the elevated ridges in which it crosses Brasil, cools the lengthened and burning shores of the South-Sea and of the gulf of Mexico.

These elementary dispositions are only part of the resources of Nature, for mitigating the heat in warm countries. She there shades the ground with creeping vegetables and trees in form of a parasol, some of which, such as the cocoa-tree of the Sechelles islands and the talipot of Ceylon, have leaves from twelve to fifteen feet long, and from seven to eight feet broad. She clothes the animals of those regions with hairless skins, and colours them in general, as well as the verdure, with dark and dusky tints, in order to diminish the reflexes of the heat and of the light. This last consideration leads me here to suggest a few reflections on the effects of colours; the little which I shall advance on this subject will be sufficient to produce conviction that their generations are not the effect of chance; that it is from reasons profoundly wise we find one half of them proceed in compounding themselves toward the light; and in their decomposition toward darkness; and that all the harmonies of this World are produced by contraries.

Naturalists consider colours as accidents. But if we attend to the general uses for which nature employs them, we shall be persuaded that there is not even on the rocks a single shade impressed without a meaning and a purpose. Let us observe, in the first place, the principal effects of the two extreme colours, white and black, with relation to the light. Experience demonstrates that of all colours, white is that which best reflects the rays of the Sun, because it sends them back without any tint, as pure as it receives them; and that black, on the contrary, is the least adapted to their reflection, because it absorbs them. This is the reason why gardeners whiten the walls against which their espaliers are planted, in order to accelerate the maturity of their fruits, by the reverberation of the Sun's rays; and why opticians blacken the walls of the *camera-obscura*, that their reflexes may not disturb the luminous picture on the tablet.

Nature of consequence frequently employs to the North the white colour, in order to increase the light and heat of the Sun. Most of the lands there are whitish or of a clear gray. The rocks and sands of the northern regions are filled with mica and specular particles. Farther, the whiteness of the snows which cover them in Winter, and the vitreous and crystalline particles of their ices, are exceedingly adapted to mitigate the action of the cold, by reflecting the light and heat in the most advantage-

ous manner. The trunks of the birch trees, of which the greatest part of their forests consist, are covered with a bark as white as paper. Nay, in some places, the earth is clothed with a vegetation completely white.

“ In the eastern part,” says an intelligent Swede, “ of the lofty mountains which separate Sweden from Norway, exposed to the utmost rigor of the cold, there is a very thick forest, and singular in this respect, that the pine which grows there is rendered black by a species of filamentous lichen, which hangs upon it in great abundance ; whereas the ground is covered every where around with a white lichen, which in lustre rivals the snow.”*

Nature there bestows the same colour on most animals, such as the white bear, the wolf, the partridge, the hare, the ermine ; others perceptibly whiten to a certain degree in Winter, such as foxes and squirrels, which are reddish in Summer and light gray in Winter. Nay if we consider the filiform figure of their hair, it's varnish and transparency, we shall be sensible that it is contrived in the most proper manner for reflecting and refracting the rays of light. We ought not to imagine this whiteness as a degeneration or enfeebling of the animal, as Naturalists have done with respect to the human hair, which whitens in old age, as they tell us, from a failure of radical moisture ; for nothing can be of a closer contexture than most of those furs, nor any thing more vigorous than the animals which are arrayed in them. The white-bear is one of the strongest and most formidable of animals in the world ; it frequently requires several musket-shot to bring him down.

Nature, on the contrary, has tinged with red, with blue, with dusky and black tints, the soil, the vegetables, the animals, nay even the men, of the Torrid Zone, for the purpose of their absorbing the fires of the burning Atmosphere with which they are surrounded. The lands and the sands of the greatest part of Africa, situated between the Tropics, are of reddish brown, and the rocks are of a black hue. The Islands of France and of Bourbon, which are on the border of that Zone, are in general of the same dark complexion. I have seen there chickens and

* Extract from the Natural History of the rein-deer, by *Charles-Frederick Hoffberg*, translated by M. le Chevalier de *Keralio*.

paroquets, not only whose plumage, but the skin itself was dyed black. I have likewise seen in those islands fishes entirely black, and especially among the species which live near the surface of the water, over the shallows, such as the old woman and the thornback.

As animals whiten in Winter toward the North in proportion as the Sun withdraws from them, those of the South assume dark and dusky tints in proportion as the Sun approaches. When he is in the Zenith, the sparrows of the tropical countries have breast plates, and the plumage of the head completely red. There are birds in those regions which change their colour three times every year, having, if I may use the expression, one dress for Spring, another for Summer, and a third for Winter, according as the Sun is in the Line, in the Tropic of Cancer, or in that of Capricorn.*

This too is very remarkable, and of consequential importance to the use which Nature makes of these colours to the North and to the South ; namely, that in all countries the whitest part of an animal is the belly, because more heat is wanted there for promoting digestion, and for carrying on the other animal functions : and on the contrary the head is universally most strongly coloured, especially in those of hot countries, because in the animal economy that part stands most in need of being kept cool.

It cannot be maintained that the bellies of animals preserve their whiteness, because that part of the body is sheltered from

* The white colour accordingly increases the effect of the rays of the Sun, and the black weakens it. The inhabitants of Malta whiten the inside of their apartments, in order, as they allege, to render the scorpions perceptible which are very common in that island. In doing this, if I am not mistaken, they commit two errors ; the first, in misapprehending the colour : for the scorpions which there are gray, would appear still better on a dark ground, the second, and one of much greater importance, is their increasing to such a degree the reverberation of the light, that the eye-sight is sensibly affected by it. To this cause I principally ascribe the disorder of the eye so frequently complained of by those islanders. Our trades-people wear white hats in Summer, when in the country, and complain of head-achs. All these evils arise from neglecting to study Nature. In the Isle of France they employ for wainscoting the wood of the country, which in time becomes entirely black ; but this tint is too gloomy. It seems as if Nature had foreseen in this respect the services which Man was to derive from the interior of trees ; their timber is brown in most of those hot countries, and white in those of the northern regions, such as the fir and the birch.

the Sun ; and that their heads assume strong colouring from being more exposed to his influence. It might appear from reasons of analogy that the natural effect of light ought to be, to invest with it's lustre all the objects which it touches ; and that conformably to this, the soil, the vegetables and the animals of the Torrid Zone ought to be white ; and that darkness, on the contrary, acting for several months together on the Poles, ought to clothe every object within those regions in robes of mourning. But Nature subjects not herself to mechanical Laws. Whatever may be the physical effect of the presence of the Sun, or of his absence, she has contrived toward the North, to impose very black spots on the whitest bodies, and to the South, white spots on the darkest bodies. She has blackened the tip of the tail of the Siberian ermine, in order that these little animals which are white all over, as they march along the snow, where they scarcely leave any traces of their footsteps, may be enabled to distinguish each other when proceeding in a train, in the luminous reflexes of the long nights of the North.

Perhaps too this blackness opposed to the white may be one of those decided characteristics with which she has marked beasts of prey ; such as the extremity of the black snout and the black paws of the white bear. The ermine is a species of weasel. There are likewise in the North foxes completely black ; but they are indemnified for the influence of the white colour by the warmest and thickest of furs ; it is the most valuable of all those of the North. Besides, this species of foxes is very rare even in those countries. Nature has perhaps clothed them in black because they live in subterraneous places, in the midst of warm sands, or in the vicinity of certain volcanos, or for some other reason to me unknown, but corresponding to their natural calls. It is thus she has clothed in white the pailleur, or bird of the Tropics, because this fowl, which flies at a prodigious elevation above the Sea, passes part of it's life in the vicinity of a frozen Atmosphere. These exceptions by no means destroy the general adaptation of those two colours ; on the contrary they confirm it, seeing it is employed by Nature for diminishing or increasing the heat of the animal, in conformity to the temperature of the place where it lives.

I now leave it to Naturalists to explain how it comes to pass that cold should cause to vegetate the hair of animals in the

North ; and why the heat should shorten or cause to fall off the hair of animals to the South ; in contradiction to all the Laws of systematic, nay of experimental Physics ; for we are assured from our personal experience that Winter retards the growth of the human hair and beard, and that the Summer accelerates it.

I believe I have a glimpse of a Law very different from the Law of analogies, which we so commonly assign to Nature, because it allies itself to our weakness by affording us a pretence to explain every thing, with the assistance of a small number of principles. This Law, infinitely varied in it's means, is that of *compensations*.* It is a consequence from the universal Law, or the mutual adaptation of things, and a sequel of the union of contraries, whereof the harmonies of the Universe are composed. Thus it frequently happens that effects so far from being the results of causes are opposite to them. For example, it has pleased Nature to clothe in white several birds, the inhabitants of warm regions, such as the heron of the Antilles, and the paroquet of the Moluccas, called *cacatoes* ; but she has bestowed at the same time on their plumage a disposition which weakens the reflection of it.

* In reflecting on these compensations, which are very numerous, and among others on those of the light of the Sun, which embrowns bodies in order to weaken the reflexes of them, it has suggested itself to my thoughts that fire must in like manner produce matter the best adapted to diminish it's own activity. And of this I have in fact made frequent proof, by throwing a little ashes on the flame blazing on my hearth. By this means I have been able to quench it suddenly almost without smoke. I recollect to this purpose having some time ago seen in one of our sea-ports, a great caldron full of pitch catch fire, which they were heating for careening a ship. Inexperienced persons immediately attempted to extinguish the flame by throwing water upon it ; but the boiling and inflamed matter spread only the more violent in torrents of fire over the brim of the caldron ; I did not think a single ladle-full would be left within the vessel, when an old seaman run up and instantly brought it down by throwing upon it a few shovels-full of ashes. I believe therefore that by uniting this application with that of water, great assistance might be derived in case of conflagrations ; for the ashes would not only deaden the flame, without exciting that dreadful smoke which arises from it as soon as the engines begin to play, but when once thoroughly moistened they would retard the evaporation of the water, which is almost instantaneous when the fire has made a considerable progress. It would afford me inexpressible satisfaction should this observation merit the attention of those who have ability to give it from their experience, sagacity and influence, all the utility of which it is susceptible

Farther, it is very remarkable that she has furnished the heads of those birds with tufts and plumes of feathers which overshadow them, because, as was formerly observed, the head is that part of the body which in the animal economy stands most in need of being kept cool. Such is our crested hen, which comes originally from Numidia. Nay I do not believe that there are to be found in any but southern countries, birds with tufted heads. If there be some toward the North, as the lapwing, they make their appearance there only in Summer. Most of those of the North, on the contrary, have the belly and the feet clothed with tippets formed of down similar to the finest of wool.

This likewise is farther worthy of remark, respecting the white birds and quadrupeds of the South, which live in a hot Atmosphere, namely, if I am not mistaken, that the skin of them all is black; which is sufficient to counterbalance the reflection of the colour of their exterior dress. *Robert Knox*, in speaking of certain white quadrupeds of the Island of Ceylon, says that their skin is entirely black. I myself recollect to have seen at Port l'Orient, a *cacatoes* whose stomach had been stripped of the feathers, and displayed a skin as black as that of a Negro. When this white bird with his black beak and black and naked breast, erected his plume and clapped his wings, he had the complete air of an Indian King with his crown and mantle of feathers.

The Law of compensations employs therefore means endlessly varied, which contradict most of the Laws which we have laid down in Physics; but this Law must itself be subjected to that of general accommodation or conformity; without which, were we to attempt to render it universal, it would involve us in the common error. It has given rise in Geometry to several axioms extremely doubtful, though of great celebrity, such as the following; *the action is equal to the re-action*; and this other, which is a consequence from it, *the angle of reflection is equal to the angle of incidence*. I shall not stop to demonstrate in how many cases these axioms are erroneous; how many actions in Nature are without re-actions; how many angles of reflection are deranged by the very planes of incidence. It is sufficient for me at present to repeat what I have already oftener than once advanced, namely, that the weakness of the human mind,

and the vanity of our education, are incessantly prompting us to generalize. This mode of proceeding is the source of all our errors, and perhaps of all our vices. Nature bestows on every being that which is adapted to it in the most perfect conformity, according to the Latitude for which it is destined; and when the temperature of that Latitude is affected by change of season, she is pleased to vary likewise the adaptations. Some of these adaptations are accordingly immutable, and others variable.

Nature frequently employs contrary means for producing the same effect. She makes glass with fire; she makes it too with water, crystal for instance: farther, she produces it from animal organization, such as certain transparent shell-fish. She forms the diamond by a process to us utterly unknown. Conclude now, because a body has been vitrified it must certainly be by the effect of fire, and rear on this perception the system of the universe! The utmost that we are capable of doing is to catch some harmonic instants in the existence of beings. That which is vitrifiable becomes calcareous, and what is calcareous changes into glass by the action of the same fire. Deduce then from these simple modifications of the fossil kingdom invariable characters for determining the general classes of it!

On the other hand, Nature frequently employs also the same means for producing effects directly contrary. For example, we have seen that in order to increase the heat over the lands of the North, and to mitigate it over those of the South, she made use of opposite colours; she produces in both the same effects by covering the face of the one and of the other with rocks. These rocks are essentially necessary to vegetation. I have frequently remarked in those of Finland stripes of verdure skirting their bases to the South; and in those of the Isle of France I have seen such verdant stripes on the side averted from the Sun.

The same observations may be made in our own climate. In Summer when every thing is parched, we frequently find green herbage under walls which have a northerly aspect; it disappears in Winter; but then we find it replaced in front of eminences which face southward.

We have already remarked that the Icy Zones and the Torrid Zone contain the greatest quantity of waters, the evaporation

of which equally tempers the violence of the heat and of the cold, with this difference, that the greatest lakes are toward the Poles, and the greatest rivers toward the Line. There are, it is admitted, some lakes in the interior of Africa and America ; but they are placed in elevated atmospheres in the centre of mountains, where they are not liable to corruption from the action of the heat ; but the plains and low grounds are washed by the greatest currents of living water that are in the World, such as the Zara, the Senegal, the Nile, the Mechassippi, the Oroonoko, the Amazon, and others.

Nature proposes to herself, universally, only the accommodation of beings possessed of sensibility. This remark is all-important in the study of her Works ; otherwise from the similitude of the means which she employs, or the exceptions from them, we might be tempted to doubt of the consistency of her Laws, instead of ascribing the majestic obscurity which pervades them to the multiplicity of her resources, and to the profundity of our own ignorance.

This law of adaptation and conformity has been the source of all our discoveries. It was this which wafted *Christopher Columbus* to America ; because, as *Herrera* tells us,* he thought, contrary to the opinion of the Ancients, that the whole five Zones must be inhabited, as GOD had not formed the Earth to be a desert. It is this Law which regulates our ideas respecting the objects absolutely beyond the reach of our examination. By means of it, though we are ignorant whether there may be men in the Planets, we are assured there must be eyes, because there is light. It is this which has awakened a sense of Justice in the heart of every man, and which informs him that there is another order of things after this life is at an end. This Law in a word is the most irresistible proof of the existence of GOD ; for amidst such a multitude of adaptations, so ingenious that our passions themselves, restless as they are, never could have devised any thing similar ; and so numerous, that every day is presenting to us some that have all the merit of novelty, the first of all, which is the DEITY, must undoubtedly exist, as he is the general conformity of all particular conformities.

* *Herrera's History of the West-Indies.* Book i. chap. 2

It is this above all whose existence we endeavour even involuntarily every where to trace, and to assure ourselves of it in every possible manner. And this explains to us the reason why the most splendid and comprehensive collections in Natural History, Galleries of the choicest master-pieces in Painting, Gardens filled with the rarest and most curious plants, Libraries stored with the most valuable and best written books ; in a word, every thing that presents to us the most marvellous relations of Nature, after having raised us to an ecstasy of admiration, conclude by superinducing languor and fatigue. We frequently prefer to all these a rustic mountain, a rugged rock, some wild solitude, which might present to us relations newer and still more direct.

How often on coming out of the King's magnificent Cabinet of Natural History do we stop mechanically to look at a gardener digging a hole in the field with his spade, or at a carpenter hewing a piece of timber with his hatchet ? It looks as if we expected to see some new harmony start out of the bosom of the Earth, or burst from the side of a lump of oak. We set no value on those which we have just been enjoying, unless they lead us forward to others which as yet we do not know. But were the complete History given us of the stars of the Firmament, and of the invisible Planets which encircle them, we should perceive in them a multitude of ineffable plans of intelligence and goodness, after which the heart would continue fondly to sigh : its last and only end is the DIVINITY himself.

STUDY XI.

APPLICATION OF SOME GENERAL LAWS OF NATURE TO PLANTS.

BEFORE I proceed to speak of plants I must be indulged in making a few reflections on the language of Botany.

We are still so young in the study of Nature, that our languages are deficient in terms to express her most common harmonies. This is so true, that however exact the description of plants may be, and compiled by Botanists of whatever ability, it is impossible to distinguish them in the fields, unless you have previously seen them in Nature, or at least in a herbarium. Persons who think they have made the greatest proficiency in Botany need only attempt to draw on paper a plant which they have never seen, after the description of the most accurate Master, to be convinced how widely the copy deviates from the original.

Men of genius have nevertheless taken inexpressible pains to assign characteristic names to the different parts of plants. They have even borrowed most of those names from the Greek, a language of singular energy of expression. From this has resulted another inconveniency ; it is, that those names being for the most part compounds, cannot be rendered into modern language ; and for this reason it is that a great part of the Works of *Linnaeus* are absolutely incapable of translation.* These learned and mysterious expressions no doubt diffuse a venerable air over the study of Botany ; but Nature has no need of such resources of human art to attract our respect. The sublimity of her Laws can easily dispense with the emphasis and obscurity of our expressions. The more light a man carries in his own bosom the more wonderful he esteems it to be.

* This observation is by no means correct. *All* the writings of *Linnaeus* are capable of translation : and, in truth, some of the most technical of them have been ably rendered into different languages, particularly into the English. I do not think there is one word in the works of the illustrious Swede which is not susceptible of being rendered, and rendered fully and emphatically into English.—B. S. B.

After all, most of those foreign names employed particularly by the herd of Botanists, do not so much as express the most common characters of vegetables. They frequently make use for example, of such vague expressions as these, *suavè rubente*, *suavè olente*, of an agreeable red, sweet smelling, in order to characterize flowers ; without expressing the shade of red or the species of perfume. They are still more embarrassed when they wish to convey the dusky colours of the stem, of the root, or of the fruit : *atro-rubente*, say they *fusco-nigrescente*, of a dark red, of a dusky brown. As to the forms of vegetables, the case is still worse, though they have fabricated terms compounded of four or five Greek words to describe them.

J. J. Rousseau communicated to me one day a set of characters somewhat resembling the algebraic, which he had invented for the purpose of briefly expressing the colours and forms of vegetables. Some of them represented the forms of the flowers ; others those of the leaves, others those of the fruits. Some resembled a heart, some were triangular, some of the lozenge shape. He did not employ above nine or ten of those signs to compose the expression of one plant. Some he placed above others, with cyphers which indicated the genera and the species of the plant, so that you would have taken them for the terms of an algebraic formula. However ingenious and expeditious this method might be, he informed me that he had given it up because it presented to him skeletons only.

This sentiment came with peculiar grace from a man whose taste was equal to his genius, and may suggest some reflections to those who are for giving abridgments of every thing, especially of the Works of Nature. The idea of *John James*, however, well deserves to be followed up, should it only serve to produce one day an alphabet proper to express the language of Nature. All that seems requisite is the introduction of accents to convey the shades of colours, and all the modifications of savours, perfumes, and forms. Even then those characters could not be delineated with perfect precision, unless the qualities of each vegetable were first exactly determined by words : otherwise the language of Botanists, which is now accused of speaking only to the ear, would make itself intelligible only to the eye.

This is what I have to propose respecting an object so highly interesting, and which will perfectly coalesce with the general

principles which we shall afterwards lay down. The little which I may advance upon the subject will serve to supply expression, not only in Botany, and in the study of the other natural Sciences, but in all the Arts, where we find ourselves puzzled every instant for want of terms to convey the shades and forms of objects.

Though we have only the term *white* whereby to express the colour which bears that name, Nature presents to us a great variety of sorts of it. Painting with respect to this article is as barren as language.

I have been told of a famous painter of Italy, who upon a certain occasion found himself very much embarrassed how to represent in one of his pieces three figures dressed in white. The point in question was to give effect to those figures, to be thus uniformly dressed, and to draw out different shades of the most simple and the least compounded of all colours. He was going to abandon his object as a thing impossible, when happening to pass through a corn-market he perceived the effect which he was in quest of. It was a group formed by three millers, one of whom was under a tree, the second in the half tint of the shade of that tree, and the third exposed to the rays of the Sun: so that though the drapery of all the three was white, they were completely detached from each other. He introduced a tree therefore amidst the three personages of his picture, and by illuminating one of them with the rays of the Sun, and throwing over the other two different tints of shade, he was enabled to exhibit a drapery of three several casts of white.

This however was rather to elude the difficulty than to resolve it. And this is in fact what Painters do in similar cases. They diversify their whites by shades, half-tints, and reflexes; but these whites are not pure; they are always disturbed with yellow, blue, green, or gray. Nature employs several species of white without diminishing the purity of it, by dotting, rumppling, radiating, varnishing it, and in various other ways..... Thus the whites of the lily, of the daisy, of the lily-of-the-valley, of the narcissus, of the anemone-nemorosa, of the hyacinth, are all different from each other. The white of the daisy has something of that of a shepherdesses' cornet; that of the hyacinth has a resemblance of ivory; and that of the lily, half transparent and crystalline, resembles the paste of porcelain. I believe, there-

fore, that all the whites produced by Nature or by Art, might be referred to those of the petals of our flowers. We should thus have in vegetables a scale of shades of the purest white.

We might in like manner procure all the pure and imaginable shades of yellow, of red, and of blue, from the flowers of the jonquil, of the saffron, of the butter-flower of the meadow, of the rose, of the poppy, of the blue-bottle of the corn-field, of the larkspur, and so on. We might find, in the same manner, among our common flowers, all the compound shades, such as those of the impurpled violet and foxglove, which are formed of the various harmonies of red and blue. The single compound colour, made up of blue and yellow, which constitutes the green of our herbage, is so varied in every plain, that each plant, I may venture to affirm, has it's peculiar shade of that colour. I can have no doubt that Nature has displayed in equal variety the other colours of her palette, in the bosom of flowers, or on the surface of fruits.

In performing this she sometimes employs very different tints without confounding them; but she lays them on one above another, so that they form the dove's neck: such is the beautiful shag which garnishes the corola of the anemone; in other cases she glazes their surface, as certain mosses with a green ground, which are glazed over with purple; she velvets others, such as the pansy; she powders over some fruits with a delicately fine flour, such as the purple plumb, distinguished by the addition of *de Monsieur*; or invests them with a light brown to soften their vermilion, as the peach; or smooths their skin, and gives the brightest lustre to their colours, as to the red of the apple of Calleville.

What embarrasses Naturalists the most in denominating colours, is to find distinctive epithets for such as are dusky; or rather, this gives them no manner of concern: for they evade the difficulty by the vague and indecisive expressions, of blackish, gray, ash-coloured, brown, which they convey, it is true, in Greek and Latin words. But those words frequently answer no purpose, except to confound their images, by giving no representation whatever; for what in good earnest is meant by these, and such like epithets, *atro-purpurante*, *fusco-nigrescente*, which they employ so frequently.

It is possible to make thousands of tints widely different from each other, to which such general expressions might be applied. As those dark shades in truth are much compounded it is exceedingly difficult to characterize them by the phraseology of our common vocabularies. But this might be easily and effectually accomplished, by referring them to the different colours of our domestic vegetables. I have remarked in the barks of our trees and shrubbery, in the capsules and shells of their fruits, as well as in the dead leaves, an incredible variety of those sad and gloomy shades, from yellow down to black, with all the intermixtures and accidents of the other colours. Thus instead of saying in Latin a yellow inclining to black, or an ash-coloured tint, in order to determine some particular shade of colour in a production of Art or of Nature, we might say a yellow of the colour of a dried walnut, or a gray like the bark of a beach tree.

Those expressions would be so much the more exact, that Nature invariably employs such tints in vegetables, as determining characters and indications of maturity, of vigor or of decay; and that our peasantry can distinguish the different species of wood in the forests by the inspection of their bark simply. Thus, not Botany alone, but all the Arts might find in vegetables an inexhaustible dictionary of unvarying colours, which would not be embarrassed with barbarous and technical compound words, but which would continually present new images. Our books of Science would thence derive much pleasing vivacity, from being embellished by comparisons and expressions borrowed from the loveliest kingdom of Nature.

The great Poets of Antiquity carefully availed themselves of this, by referring most of the events of human life to some appearance of the vegetable kingdom. Thus *Homer* compares the fleeting generations of feeble mortals to the leaves which drop from the trees of the forest at the end of Autumn; the freshness of beauty to that of the rose; and the paleness which overspreads the countenance of a young man wounded to death in battle, as well as the attitude of his drooping head, to the colour and the fading of a lily, whose root has been torn up by the plough. But we satisfy ourselves with repeating the expressions of men of genius, without daring to tread in their footsteps. This however is not the worst, for most Naturalists con-

sider the colours themselves of vegetables as accidents simply. We shall presently see under what a grievous mistake they labour, and how widely they have deviated from the sublime plans of Nature, by persisting in the prosecution of their mechanical and systematic methods.

It is possible in like manner to trace an approximation of savours and smells of every species, and of every country, to those of the plants of our gardens and of our fields. The ranunculus of the meadow has the acridity of the Java-pepper. The root of the caryophyllata, or holy-thistle, and the flower of the pink, smell like the clove of Amboyna. As to compound savours and smells, they may be referred to such as are simple, the elements of which Nature has scattered over all climates, and which she has united in the class of vegetables. I know a species of morel used as food by the Indians, which when boiled has the taste of beef. They call it *brette*. There is a species of the crane's-bill, the leaf of which resembles in smell a roasted leg of mutton. The muscari, a species of small hyacinth, which grows among shrubbery early in the Spring, smells very strongly of the plumb. It's small monopetalous flowers, of a delicate blue colour and with lips or incisions, have likewise the form of that fruit.

By approximations such as these, the English Navigator *Dampier*, and Father *du Tertre*, have given us, as far as I can judge, the most accurate notions of the fruits and flowers which grow between the Tropics, by referring them to the fruits and flowers of our own climates. *Dampier*, for example, in order to describe the banana, compares it, when stripped of it's thick five-pannelled skin, to a large sausage ; it's substance and colour to fresh butter in Winter ; it's taste, a mixture of apple and of the pear known by the name of the good-christian, which melts in the mouth like marmalade. When this traveller describes some good fruit of the Indies, he sets your mouth a-watering. He possesses a naturally sound understanding, superior at once to the methodical trammels of the learned, and to the prejudices of the vulgar. He maintains, for instance, and with truth on his side, in opposition to the opinion of most navigators, that the plantain, or banana, is the king of fruits, without excepting even the cocoa. He informs us, that this is likewise the opinion of the Spaniards, and that multitudes of families live between

the Tropics on this pleasant, wholesome, and nourishing fruit, which lasts all the year round, and stands in no need of any of the arts of cookery.

Father *du Tertre* is not less happy nor less accurate in his botanical descriptions. These two travellers give you at a single stroke, by means of trivial similitudes, a precise idea of a foreign vegetable, which you would search for to no purpose in the Greek names of our first-rate Botanists. This mode of describing Nature, by ordinary images and sensations, is held in contempt by the learned ; but I consider it as the only one capable of exhibiting pictures that have a resemblance, and as the true character of genius. With such assistance you will be enabled to paint every natural object, and may dispense with methods and systems ; without it you will only coin phrases.

Let us now suggest a few thoughts respecting the form of natural objects. It is here that the the language of Botany, and even those of the other Arts, are peculiarly barren. Geometry, whose particular object this is, has invented scarcely more than a dozen regular curves, which are known only to a small number of the learned ; and Nature employs an infinite multitude of them in the forms of flowers alone. Some of the uses of these we shall presently indicate. Not that I mean to make of a study prolific of delight a sublime Science, worthy only of the genius of a *Newton*. As Nature has introduced, in my opinion, not only the colours, the savours, and the perfumes, but likewise every model of form into the leaves, the flowers, and the fruits of all climates, whether in trees, in herbage, or in mosses ; the vegetable forms of other parts of the World might be referred to those of our own country which are most familiar to us. Such approximations would be much more intelligible than the Greek compound words, and would manifest new relations in the different classes of the same kingdom.

They would be no less necessary for expressing the aggregations of the flowers on their stems, of the stems round the root, and the groups of young plants around the parent-plant. It may be affirmed, that the names of most of these vegetable aggregations and dispositions are yet to be invented ; the greatest Masters not having been fortunate in characterizing them, or, to speak without reserve, not having made it any part of their study.

For example, when *Tournefort** speaks, in his *Voyage to the Levant*, of a heliotrope of the Isle of Naxos, which he characterizes thus *heliotropum humifusum, flore minimo, semine magno*, the creeping heliotrope, with a very small flower and a large seed ; he says that it has it's flowers disposed in form of an ear of corn going off in a scorpion's tail. There are two mistakes in this description ; for the flowers of this heliotrope, similar from their aggregation to the flowers of the heliotrope of our climates, and to that of Peru, are not disposed in form of an ear of corn, for they are arranged on a horizontal stem, and only on one side ; and they bend downward like the tail of a snail, and not upward like the tail of a scorpion.

The same inaccuracy with respect of image is to be found in the description which he gives us of the *stachis Cretica latifolia*, the broad-leaved stachis of Crete : it's flowers, says he, are disposed in rings. No one can imagine he intends to convey this meaning, that they are disposed like the divisions of the king of the chess-board. Under this form however they are represented in the drawings of *Aubriet*, his designer. I do not know any botanic expression which conveys this character of spherical aggregations in separate stories of alternate swellings and sinkings, and terminating in a pyramid. *Barbeau du Bourg*, who possesses much imagination with little exactness, calls this form verticillate, for what reason I know not. If it is from the Latin word *vertex*, head or summit, because these flowers thus aggregated form several summits, this denomination would be more applicable to several other plants ; and besides it does not express the swellings, the sinkings, and the progressive diminution of the flowers of the stachis.

Tournefort derives it from the Latin word *verticillus* ; that is, says he, a small weight perforated circularly to receive the end of a spindle, in order to make it whirl with greater facility. This is going a great way in quest of a very imperfect similitude to an utensil by no means generally known. In saying this however, I would not be considered as failing in the respect which is due to such a man as *Tournefort*, who first cleared for us the botanic path, and was besides a person of profound erudition. But from this carelessness of the great Mas-

* *Tournefort's Voyage to the Levant*, vol. i

ters we may form a judgment of the vague, inaccurate, and incoherent expressions which fill the vocabulary of Botany, and diffuse obscurity over it's descriptions.

After all I shall be asked, How would you characterize the aggregation of the flowers of the two plants which have just been mentioned? By referring them to aggregations similar to those of the plants of our own climates. In this there can be no difficulty: thus, for example, we might refer the assemblage of the flowers of the Grecian heliotrope to that of the French or Peruvian heliotrope; and that of the flowers of the Cretan stachis to that of the flowers of the horehound, or of the pennyroyal. To this might afterwards be added the differences in colour, smell, savour, which diversify the species of it. There is no occasion to compound foreign terms to describe forms which are familiar to us. Nay, I defy any one to convey by Greek and Latin words, and with the most learned turn of periphrasis, the simple colour of the bark of a tree. But if you tell me it resembles that of an oak, I have the shade of it at once.

These approximations of plants have this farther utility, that they present us with the combined whole of an unknown object, without which we can form no determinate idea of it. This is one of the defects of Botany, it exhibits the characters of vegetables only in succession; it does not collect them, it decomposes them. It refers them indeed to a classical order, but not to an individual order. This however is the only one which the human mind permits us to catch. We love order because we are feeble, and because the least confusion disturbs us; now there is no order which we can adopt more easily than that which approaches to an order which is familiar to us, and which Nature is every where presenting. Try to describe a man feature by feature, limb by limb; be ever so exact, yet you never will be able to give me his portrait: but if you refer him to some known personage; if you tell me, for example, that he is of the make and mean of a Don Quixote, or with a nose like that of St. Charles Baromeo, and so on, and you paint me his picture in four words. It is to the whole of an object that the ignorant, as epithet which includes the greatest part of Mankind, attach themselves in the first instance, in order to acquire the knowledge of it.

It would therefore be of essential importance to have, in Botany, an alphabet of colours, savours, smells, forms, and aggregations derived from our most common plants. Those elementary characters would enable us to express ourselves exactly in all the parts of Natural History, and to present to ourselves relations equally new and curious.

In hope that persons of superior intelligence may hereafter be induced to take up the subject, I proceed to the discussion of it with what ability I have, notwithstanding the embarrassment of language.

When we see a multitude of plants of different forms vegetate on the same soil, there is a disposition to believe that those of the same climate grow indifferently every where. But those only which are produced in places particularly assigned to them by Nature, attain there all the perfection of which they are susceptible. The same thing holds good with respect to animals. Goats are sometimes reared in marshy places, and ducks on the mountains; but the goat never will acquire in Holland the beauty of that which Nature clothes with silk on the rocks of Angora; nor will the duck of Angora ever attain the stature and the colours of those which are to be found in the canals of Holland.

If we throw a simple glance on plants, we shall perceive that they have relations to the elements which promote their growth; that they have relations to each other, from the groups which they contribute to form; that they have relations to the animals which derive nourishment from them; and finally to Man, who is the centre of all the Works of Creation. To these relations I give the name of harmonies, and I divide them into elementary, into vegetable, into animal, and into human.

By proposing this division, I shall reduce to something like order the disquisition on which I am going to enter. It cannot be supposed that I should examine them in detail: those of a single species would furnish speculations which the application of a whole life could not exhaust; but I shall unfold enough of their general harmonies to produce conviction, that an infinite Intelligence reigns in this amiable part of Creation, as in the rest of the Universe.

We shall thus make application of the Laws which have been previously established, and shall take a glimpse of a multitude

of others equally worthy of research, and equally calculated to excite admiration. Reader, be not astonished at either their number or their extent. Let this great truth be deeply impressed on thy heart: *GOD has made nothing in vain!* A scholar, with his systems and methods, finds himself stopped short in Nature every step he takes; while furnished with this as a key, the ignorant rustic is able to unlock every door of knowledge.

ELEMENTARY HARMONIES OF PLANTS.

Plants have as many principal parts as there are elements with which they keep up a relation. By their flowers they stand related to the Sun, which fecundates their seeds, and carries them on to maturity; by their leaves they are related to the waters which bedew them; by their stems, to the winds which agitate them; by their roots, with the ground which sustains them; and by their grains, with their situations adapted to their growth and increase. Not that these principal parts have no indirect relations besides to the other elements, but it will be sufficient for our purpose to dwell on such as are immediate.

Elementary Harmonies of Plants with the Sun, by the flowers.

Though Botanists may have made great and laborious researches respecting plants, they have paid no attention to any of those relations. Fettered by their systems, they have attached themselves to the consideration of them particularly on the side of the flowers; and have arranged them in the same class, wherever they found these external resemblances, without so much as enquiring what might be the particular use of the florification. They have indeed distinguished in it the stamina, the antheræ, and the stigmata, for the fecundation of the fruit; but excepting this, and some others which respect the interior organization, they have neglected or misunderstood the relations which the whole plant has with the rest of Nature.

This partial division has led them into the strangest confusion; for by considering the flowers as the principal characters of vegetation, and by comprehending in the same class those which were similar, they have united plants entirely foreign to each other, and have separated, on the contrary, many which are evi-

dently of the same genus. Such is, in the first case, the fullers-thistle, called *dipsacus*, which they class with the scabious, because of the resemblance of some parts of it's flower, though it presents in it's branches, it's leaves, it's smell, it's seed, it's prickles, and the rest of it's qualities, a real thistle : and such is, in the second, the great chesnut of India, which they exclude from the class of chesnut-trees because it has different flowers. To class plants from the flowers, that is, from the parts of their fecundation, is the same thing with classing animals from those of generation.*

However, though they have referred the character of a plant to it's flower, they misunderstand the use of it's most shining part, which is that of the corolla. They call that the corolla, which is in common language denominated the leaves of a flower. It is a Latin word, signifying a little crown, from the disposition of the leaves in many species in the form of coronets, and they have given the name of petals to the divisions of that crown. Some in truth have acknowledged it to be properly adapted for covering the parts of fecundation before the expansion of the flower ; but it's calix is much better adapted to this purpose, from it's thickness, from it's beards, and sometimes from the prickles with which it is invested. Besides, when the corolla leaves the stamina exposed, and when it continues fully blown for whole weeks, it must of necessity be answering some other purpose, for Nature does nothing vain.

The corolla seems intended to reverberate the rays of the Sun on the parts of fecundation ; and we shall be put beyond the reach of doubt as to this, if we consider the colour and the form of it in most flowers. It has been remarked in the preceding

* The *dipsacus* is not a real thistle ; and as to " the great chesnut of India," which I take to be the *aesculus hippocastanum* of Linnaeus, it would, indeed, be a violation of every just principle of botanical science not to " exclude this from the class of chesnut-trees." Surely, these two vegetables do not differ from each other merely in the form, &c, of their leaves. Are not their fruits very different ? I grant that, with much attention to boiling, &c, the nuts of the horse-chesnut may be eaten : and I think Thunberg tells us, that the nuts of one species of this family are served up, boiled, at the Cape of Good-Hope. I have tried to eat the nuts of the American species formerly mentioned (see note to the first volume, page 34,) but I could, not even by boiling, subdue their bitterness.—B. S. B.

Study, that of all colours, white is the most proper for reflecting the heat: now it is in general that which Nature bestows on the flowers that blow at cold seasons and in cold places, as we see is the case in the snow-drop, the lily of the valley, the hyacinth, the narcissus, and the anemone-nemerosa, which come into flower early in the Spring. We must likewise assign to this colour such as have slight shades of the rose and of the azure, as many hyacinths; as well as those which have yellow and shining tints, as the flowers of the dandelion, the butter-flower of the meadow, and the wall gilly-flower. But such as blow at warm seasons and in warm situations, as the cockle, the wild poppy, and the blue-bottle, which grow in summer amongst the corn, are dressed in strong colours, such as purple, deep red, and blue, for these absorb the heat without greatly reflecting it.*

I do not know however that there are any flowers entirely black; for in that case it's petals, destitute of all power of reflection, would be entirely useless. In general, of whatever colour a flower may be, the under part of it's corolla which reflects the rays of the Sun, is of a much paler tint than the rest. This is so very remarkable that Botanists, who generally consider the colours of flowers as accidents merely, distinguish it by the name of *unguiculus* (a little nail). The unguicle is that with relation to the flower which the belly is with relation to animals: it's shade is always clearer than that of the rest of the petal.

The forms of flowers are no less adapted than their colours to reflect the heat. Their corolla, divided into petals, are only

* We have here much ingenuity, and there is some justness in the author's observations. But Flora does not tie herself down to such rules as these. She produces Flowers of all colours, at each of the different seasons. It is true that many white-flowered plants do bloom in the early spring: and St. Pierre might have added, that the beautiful Christmas-rose (*helleborus niger*) spreads its white petals upon the bosom of the Snow. But the catalogue of early-flowering plants, with blossoms of a red, blue, violet, or yellow colour, is very great. I should take much pleasure in pointing out to our amiable author these exceptions to his system, along the banks of our Delaware, Schuylkill, and Susquehanna. But that pleasure I shall never have. And as to the Summer-season, so many plants with white flowers (at least with the *radius* of the flower white) are produced at this season in our corn-fields, along roadsides, &c., that one might fill a page with the bare names of them. I must not, however, omit to name different species of *chrysanthemum*, or ox-eye, *matricaria*, or wild chamomile, *erigeron*, or fleec-bane, &c.—B. S. B.

an assemblage of mirrors directed toward one focus. Of these they have sometimes four, which are plain, as the flower of the cole-wort in the cruciform ; or a complete circle, as the daisy in the class of radiated ; or spherical portions, as the rose ; or entire spheres, as the bells of the lily of the valley ; or cones mutilated, as the Foxglove, the corolla of which is formed like a sewing thimble.

Nature has placed at the focuses of these, plain, spherical, elliptical, parabolic, and other mirrors, the parts of the fecundation of plants, as she has placed those of generation in animals in the warmest parts of their bodies. These curves, which Geometricians have not yet examined, merit their most profound researches. Is it not astonishing that they should have bestowed such learned pains to find out curves altogether imaginary and frequently useless, and that they should have neglected to study those which Nature employs so regularly, and in such variety, in an infinite number of objects? Be this as it may, Botanists have given themselves still less trouble about the matter. They comprehend those of flowers under a small number of classes, without paying the slightest attention to their use, nay without so much as apprehending that they could have any. They confine themselves entirely to the division of their petals, which frequently change nothing of the configuration of their curves ; and they frequently class under the same name those which are the most opposite. Thus, under the general designation of the *monopetalous* (those that have a single petal), they include the spheroid of the lily of the valley and the trumpet of the convolvulus.

On this subject a very remarkable circumstance claims our notice, namely, that frequently such as is the curve formed by the border or upper extremity of the petal, such too is the plan of the whole petal itself ; so that nature presents to us the cut or shape of each flower in the contour of it's petals, and gives us at once it's plan and it's elevation. Thus roses, and the whole tribe bearing this denomination, have the border of their petals in sections of a circle, like the curve of the flowers themselves ; the pink and blue-bottle, which have their selvage notched, present the plans of their flowers plaited up like fans, and form a multitude of focuses.

t of the real flower, these curious remarks may be verified from the drawings of Painters who have been the most exact in copying plants, but who are indeed very few in number. Such is, among those few, *Aubriet*, who has drawn the plants of *Tournefort's Voyage to the Levant*,* with the taste of a Painter and the precision of a Botanist. You may there see the confirmation of what I have just been advancing. For example, the *scorzonera Græca saxatilis* & *maritima foliis variè laciniatis* (the Greek saxatile and marine scorzonera, with leaves variously scalloped) which is there represented, has it's petals or half-flowers squared at the extremity, and plane in their surface. The flower of the *stachis Cretica latifolia* (the broad-leaved stachis of Crete,) which is a monopetalous tubular plant, has the upper part of it's corolla undulated, as well as it's tube. The *campanula Græca saxatilis jacobææ foliis* (the Greek bell-flower of the rocks, with ragwort leaves) presents these consonances in a manner still more striking. This campanula, which *Tournefort* considers as the most beautiful he had ever seen, and which he sowed in the Royal Garden at Paris, where it succeeded very well, is of the pentagonal form. Each of it's faces is formed of two portions of a circle, the focuses of which undoubtedly meet on the same anthera; and the border of this campanula is notched into five parts, each of which is likewise cut into the form of a Gothic arch, as each subdivision of the flower is. Thus, in order to know at once the curve of a flower, it is sufficient to examine the brim of it's petal.

It is of much utility to attend to this observation, for otherwise it would be extremely difficult to determine the focuses of the petals. Besides, flowers lose their internal curves in herbaries. I believe these consonances to be general; I presume not however to assert that they admit of no exceptions. Nature may deviate from this order in some species, for reasons which I know not. It cannot be too frequently repeated—She has no general and unvarying Law, except the accommodation of beings endowed with sensibility. The relations just now suggested between the curve of the brim and that of the petal, seem beside to be founded on this universal Law, as they present conformities of such agreeable approximation.

* *Tournefort's Voyage to the Levant*, vol. 1.

The petals appear to such a degree destined to warm the parts of fecundation, that Nature has placed a circle of them around most compound flowers, which are themselves aggregations of small tubes, infinite in number, that form so many particular flowers, or, if you will, flowrets. This is obviously remarkable in the petals which surround the disks of daisies and sun-flowers. They are likewise to be met with around most of the umbelliferous plants: though each flowret which composes them has it's particular petals, there is a circle of others still greater which encompasses their assemblage, as you may see in the flowers of the daucus.

Nature has still other means of multiplying the reflexes of heat in flowers. Sometimes she places them on stems of no great elevation, in order to collect warmth from the reflections of the Earth; sometimes she glares over their corollæ with a shining varnish, as the yellow meadow-ranunculus, known by the trivial name of butter-flower. Sometimes she withdraws the corolla, and makes the parts of fecundation to shoot from the partition of an ear, of a cone, or of the branch of a tree. The forms of the spike and of the cone appear to be the best adapted for reverberating on them the action of the Sun, and to ensure their fructification, for they always present some one side or another sheltered from the cold. Nay, it is very remarkable that the aggregation of flowers in a conical and spike form is very common to herbs and trees of the North, and rarely to be found is those of the South. Most of the gramineous plants which I have seen in southern Countries do not carry their grains in a spike or closely compacted ear, but in flowing tufts, and divided into a multitude of particular stems, as the millet and rice. The maize or Turkey-corn, I admit, bears it's grains in a large ear; but that ear is for a considerable time shut up in a bag, and in bursting from it, pushes away over it's head a long covering of hair, which seems entirely destined to the purpose of sheltering it's flowers from the heat of the Sun.

Finally, what confirms me in the belief that the flowers of plants are adapted to the action of heat, conformably to the nature of every climate is this, that many of our European plants vegetate extremely well in the Antilles Islands, but never come

to seed there. Father *du Tertre* observed, that in those islands* the cabbage, the sainfoin, the lucern, the savory, the sweet basil, the nettle, the plaintain, the wormwood, the sage, the liverwort, the amaranth, and all our species of gramineous plants, thrive there wonderfully well, but never produced grains. These observations demonstrate, that it is neither the air nor the soil which is inimical to them, but the Sun, which acts with too much vivacity on their flowers, for most of these plants have theirs aggregated into an ear, which generally encreases the repercussion of the solar rays.

I believe, at the same time, that such plants might be naturalized to the West-India Islands, as well as many others of our temperate climates, by selecting from the varieties of their species, those whose flowers have the smallest fields and whose colours are the deepest, or those whose pannicles are divergent.

Not that Nature has no other resources except such as these, to make plants of the same genus attain perfection in different seasons and climates. She can render their flowers capable of reflecting the heat in different degrees of Latitude, without any very sensible alteration of the form. Sometimes she mounts them on elevated stems, to remove them from the influence of the refraction of the ground. It is thus she has placed between the Tropics most of the apparent flowers upon trees. I have seen very few there in the meadows, but a great many in the forests. In those countries you must look aloft in order to have a sight of flowers; in our native climes we must cast our eyes on the ground for this purpose, for with us flowers grow on herbage and shrubbery. Sometimes she expands them under the shade of leaves; such are those of the palm-tree, of the banana, and of the *jacquier*, which grow close to the trunk of the tree. Such likewise are, in our temperate climates those large white bell-formed flowers, known by the name of Lady's-smock, which delight in the shade of the willow.

There are others, such as most part of the convolvuluses, which expand only in the night; others grow close to the ground and exposed, as the pansy, but their drapery is dusky and velveted. There are some which receive the action of the Sun when at a considerable height, as the tulip; but Nature has

* Natural History of the Antilles, by Father *du Tertre*.

taken her precautions so exactly, as to bring out this stately flower only in the Spring, to paint it's petals with strong colours, and to daub the bottom of it's cup with black.* Others are disposed in girandoles, and receive the effect of the solar rays only under one point of the compass. Such is the girandole of the lilach, which, pointing with various aspects to the East, to the South, to the West, and to the North, presents on the same cluster flowers in bud, half open, fully blown, fading, and all the delightful shades of the florification.

There are flowers, such as the compound, which being in a horizontal position and completely exposed, behold the Sun, like the Horizon itself, from his rising to his setting; of this description is the flower of the dandelion. But it possesses very peculiar means of sheltering itself from the heat: it closes entirely whenever the heat becomes excessive. It has been observed to open in Summer at half an hour after five in the morning, and to collect it's petals toward the centre about nine

* This flower from it's colour is in Persia the emblem of perfect lovers. *Charlin* tells us, that when a young Persian presents a tulip to his mistress, it is his intention to convey to her this idea, that like this flower he has a countenance all on fire, and a heart reduced to a coal. There is no one Work of Nature but what awakens in man some moral affection. The habits of society insensibly efface at length the sentiment of it; but we always find it in vigour among Nations who still live near to Nature.

Many alphabets have been imagined in China in the earlier ages after the wings of birds, fishes, shells, and flowers: of these very curious characters may be seen in the *China Illustrated* of Father *Kercher*. It is from the influence of those natural manners, that the Orientals employ so many similitudes and comparisons in their languages. Though our metaphysical eloquence makes no great use of them, they frequently produce nevertheless a very striking effect. *J. J. Rousseau* has taken notice of that which the Ambassador of the Scythians addressed to *Darius*. Without speaking a word, he presented him with a bird, a frog, a mouse, and five arrows.* *Herodotus* relates, that the same *Darius* sent word to the Greeks of Ionia who were laying waste the country, that if they did not give over their depredations he would treat them like pines. The Greeks, who by this time had become infected with wit, and had proportionably begun to lose sight of Nature, did not comprehend the meaning of this. Upon enquiry, they at length discovered that *Darius* meant they should understand it to be his resolution utterly to exterminate them; for the pine-tree once cut down shoots out again no more.

* *Darius* at first understood this as a complete surrender of Scythian independence into his hands; but the event instructed him, that this high-spirited people intended to convey a bold defiance: "Unless you can fly as a bird, dig as a mouse, swim as a frog, our arrows shall reach you."—H. H.

o'clock. The flower of the garden-lettuce, which is on the contrary in a vertical plane, opens at seven o'clock and shuts at ten.

From a series of similar observations it was, that the celebrated *Linnæus* formed a botanical time-piece; for he had found plants which opened their flowers at every hour of the day and of the night. There is cultivated in the King's Garden at Paris a species of serpentine aloes, without prickles, whose large and beautiful flower exhales a strong odour of the vanilla during the time of it's expansion, which is very short. It does not blow till toward the month of July, and about five o'clock in the evening: You then perceive it gradually open it's petals, expand them, fade and die. By ten o'clock of the same night it is totally withered, to the great astonishment of the spectators, who flock in crowds to the sight; for what is uncommon is alone admired. The flower of our common thorn, I do not mean that of the white-thorn, is still more extraordinary; for it flowers so rapidly that there is scarce time to observe it's expansion.

These observations, taken in their connection, clearly demonstrate the relations of the corollæ to the heat of the Sun. To those which have been already produced, I shall subjoin one more by way of conclusion, which evidently proves the use for which they are intended; it is this, The duration of their existence is regulated by the quantity of heat which it is their destination to collect. The hotter it is the shorter is their duration. They almost all drop off as soon as the plant is fecundated.

But if Nature withdraws the greatest number of flowers from the too violent action of the Sun, she destines others to appear in all the lustre of his rays, without sustaining the least injury from them. On the first she bestows dusky reflectors, or such as can close themselves as occasion requires; she provides others with parasols. Such is the crown-imperial, whose flowers, like a bell inverted, grow under the shade of a tuft of leaves. The chrysanthemum-peruvianum, or to employ a better known term, the turnsol, which turns continually toward the Sun, covers itself, like Peru the country from which it comes, with dewy clouds, which cool and refresh it's flowers during the most violent heat of the day. The white flower of the ly-

chus, which blows in our fields in Summer, and presents at a distance the resemblance of a Maltese-cross, has a species of contraction or narrow collar placed at it's centre, so that it's large shining petals turned back outwardly do not act upon it's stamina. The white narcissus has in like manner a small tunnel. But Nature stands in no need to create new parts, in order to communicate new characters to her Works. She deduces them at once from existence and from non-existence; and renders them positive or negative at her pleasure. She has given curves to most flowers, for the purpose of collecting the heat at their centre: she employs the same curves when she thinks proper, in order to dissipate the heat: she places the focuses of them so as to act outwardly. It is thus that the petals of the lily are disposed, which are so many sections of the parabola. Notwithstanding the large size and the whiteness of it's cup, the more it expands the more it disperses the fervent heat of the Sun; and while in the middle of Summer, at noon-day, all other flowers, parched by his burning rays, droop and bend their heads to the ground, the lily rears his head like a king, and contemplates face to face the dazzling orb, which is travelling majestically through the Heavens.

I proceed to display in a few words, the positive or negative relations of flowers with respect to the Sun, to the five elementary forms which I have laid down in the preceding Study as the principles of the harmony of bodies. This is not so much a plan which I take upon me to prescribe to Botanists, as an invitation to engage in a career so rich in observations, and to correct my errors by communicating some portion of their knowledge.

There are, therefore, reverberating powers *perpendicular, conical, spherical, elliptical, parabolical, or plane*. To these may be referred most of the curves of flowers. There are likewise some flowers in form of a parasol, but the others are much more numerous; for the negative effects in every harmony are in much greater number than the positive. For example, there is but one single way of coming into life, and there are thousands of going out of it. We shall oppose however to every positive relation of flowers to the Sun, a principal negative relation, that we may be enabled to compare their effects in every Latitude.



REVERBERATING FLOWERS.

In the plane of the

Flower.

1. Parallel to the

4 Elliptic.

5 Spherical.

2 Concave.

11 Perpendicular.

1 The Tulip.



3 The Single Rose.



2 Convolutus of the Day.

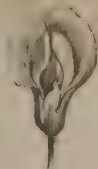


1 Ear of Corn

11 Perpendicular.



*6 The Sun
at Noon.*



5 Pet. Blisom.



8 Convolutus of the Night.



7 Ear of Rice.

11 The Blue Bottle.



10 The Imperial.

11 In unequal plane.

10 In the Ellipse inverted.

5 In the sphere tilted upwards.

6 In a Cone closed.

7 Divergent.

PARASOL FLOWERS.

PERPENDICULAR reverberating flowers are those which grow adhering by the back to a cone, to long catkins, or to an ear: such are those of the cedar, of the larch, of the fir, of the birch, of the juniper; of most of the northern gramineous plants, of the vegetables of cold and lofty mountains, as the cypress and the pine; or of those which flower in our climates about the end of Winter, as the hazel and the willow. A part of the flowers in this position is sheltered from the North wind, and receives the reflection of the Sun from the South side.

It is remarkable that all vegetables which bear cones, catkins, or spikes, present them at the extremity of their stems, exposed to all the action of the Sun. It is not so with those which grow within the Tropics; most of which, such as the palm-tree, bear divergent flowers attached to pendent clusters, and shaded by their branches. The greatest part of the gramineous plants of warm countries have likewise divergent ears; such are the millets of Africa. The solid ear of the American maize is crowned with a hairy tuft which shelters its flowers from the Sun. On the annexed plate are represented an ear of European corn, and an ear of the rice of Southern Asia, to furnish the means of comparison.

CONICAL reverberating flowers reflect on the parts of florification a complete cone of light. It's action is very powerful; and it is accordingly very remarkable, that Nature has given this configuration of petal only to flowers which grow under the shade of trees, as to the convolvulus, which scrambles up around their trunk; and that she has assigned to this flower a very transient duration, for it scarcely lasts half a day; and when it's fecundation is completed, the border contracts inwardly, and gathers together like a purse. Nature has however given it a place in southern latitudes, but she has there tinged it with violet and blue, in order to weaken the effect. Besides, this flower scarcely ever opens in hot countries except in the night. From this nocturnal character I presume it is, that we are chiefly enabled to distinguish the convolvulus of the South from that of our own climates, which blows in the day time. In the plate we have represented the day-convolvulus, or that which is native with us, expanded; and that of the night, or of hot countries, closed; the one having a positive character with the light and the other a negative.

The flowers which partake the most of this conical form are those which grow early in the Spring, as the flower of the arum, which is formed like a cornet; or those which thrive on lofty mountains, as the bears-ear of the Alps. When Nature employs it in Summer it is almost always with negative characters, as in the flowers of the Fox-glove, which are inclined, and dyed a deep red or blue colour.

SPHERICAL reverberating flowers are those whose petals are formed into segments of a circle. One might amuse himself very agreeably, in observing that these spherically formed petals have at their focuses the antheræ of the flower supported on fibrets, longer or shorter as the effect intended may require. It deserves farther to be remarked, that each petal is adapted to its particular anthera, sometimes to two, or even to three: so that the number of petals in a flower divides almost always exactly that of the antheræ. As to the petals, they scarcely ever exceed the number of five in rose-formed flowers, as if Nature had designed to express in that the number of the five terms of elementary progression, of which this beautiful form is the harmonic expression.

Spherical reverberating flowers are very common in our temperate climates. They do not throw back the whole reflection of their disks on the antheræ like the convolvulus, but only the fifth part, because each of their petals has it's particular focus. The rose-formed flower is spread over most fruit trees, as the apple, the pear, the peach, the plumb, the apricot, and the like; and over a great part of our shrubbery and herbage, such as the black and white-thorn, the bramble, the anemoné, and many others, most of which produce for Man a nutritious fruit, and which flower in the month of May. To this form may be likewise referred such as are spheroidal; the lily of the valley for example.

This form, which is the harmonic expression of the five elementary forms, was admirably adapted to a temperature like ours, which is itself the proportional medium between that of the Icy and of the Torrid Zone. As spherical reflectors collect a great quantity of rays at their focuses, their action is very powerful, but at the same time of very transient duration. It is well known that nothing fades more quickly than a rose,

Rose-formed flowers are very rare between the Tropics, especially those whose petals are white. They thrive only under the shade of trees. I have known many of the inhabitants of the Isle of France make fruitless efforts to raise strawberries there; but one of them, who lived indeed in an elevated part of the island, found means of procuring them in great plenty, by planting his beds under trees, and in ground but half-cleared.*

As a compensation for this, Nature has multiplied in warm countries papilionaceous or leguminous flowers. The leguminous flower is entirely opposite to the rose-formed. It usually has five rounded petals like the other: but instead of being disposed round the centre of the flower in order to reverberate thither the rays of the Sun, they are on the contrary folded inward around the antheræ for the purpose of sheltering them. You distinguish in them a pavilion, two wings, and a ridge, usually divided into two, by which the antheræ and the embryo of the fruit are closely covered over. Between the Tropics accordingly, a great number of trees, shrubs, creepers, and grasses, have papilionaceous flowers. Every species of our peas and french-beans succeed there wonderfully well, and those countries produce infinite varieties of them. Nay it is remarkable, that even at home those plants delight in a sandy and warm soil, and exhibit their flowers in the middle of Summer. I consider leguminous flowers therefore as of the parasol kind. To those same negative effects of the Sun may likewise be referred the form of flowers with gullets, which conceal their antheræ, such as the calfs-snout, which takes pleasure in blowing on the sides of walls.

ELLIPTICAL reverberating flowers are those which present oval-formed cups, narrower a-top than in the middle. It is very perceptible that this form of cup, the perpendicular petals of which approach toward each other at the summit, shelters in part the bottom of the flower: and that the curves of these same petals, which have several focuses, do not collect the rays of the

* I do not think this observation is correct. "Rose-formed flowers" are far from being rare between the Tropics of America. The strawberry arrives to great perfection between the Tropics. I could easily fill a page with the mere names of these *rosaceæ* which are truly *plante tropicales*. Perhaps it is more true, that rose-formed flowers with white petals, are peculiarly rare between the limits mentioned by our author.—B. S. B.

Sun toward one single centre : such is the tulip. It is remarkable that this oblong-formed flower is more common in warm countries than the rose-formed. The tulip grows spontaneously in the vicinity of Constantinople. To this form may likewise be referred that of the liliaceous, which are more common there than elsewhere. However, when Nature employs them in countries still farther to the South, or in the middle of Summer, it is almost always with negative characters ; thus she has inverted the tulip-formed flowers of the imperial, which is originally from Persia, and has shaded them with a tuft of foliage. Thus she bends back outwardly in our climates the petals of the lily ; but the species of white lilies which grow between the Tropics have besides their petals cut out into thongs.

Flowers with PARABOLIC OR PLANE mirrors, are those which reflect the rays of the Sun in parallel directions. The configuration of the first gives much lustre to the corolla of these flowers, which emit from their bosom, if I may be allowed the expression, a bundle of light, for they collect it toward the bottom of their corolla, and not on the antheræ. It is perhaps in order to weaken the action of it, that Nature has terminated flowers of this form in a species of cowl, which Botanists call spur. It is probably in this tube that the focus of their parabola terminates, which is perhaps situated there, as in many curves of this kind beyond it's summit. Flowers of this sort are frequent between the Tropics ; such is the flower of the *poincillade* of the Antilles, otherwise called the peacock flower, on account of it's beauty ; such is also the *nasturtium*, or nun of Peru. It is even pretended that the perennial species is phosphoric in the night-time.*

Flowers with plain mirrors produce the same effects ; and Nature has multiplied the models of them in our Summer flow-

* Saint-Pierre's *nasturtium*, or nun of Peru, is the *tropæolum majus* of Linnæus : "the fair *tropæus*" of Dr. Darwin. This plant is both annual and perennial. The property which is here called "phosphoric," was first observed by one of the daughters of Linnæus, Elizabeth Christina, and has been supposed, by several very competent judges, to be more of an electrical nature. "*Flores ante crepusculum fulminent, observante E. C. Linnæa.*" See Linnæi, *species plantarum*, tom. i. p. 490 : also, Darwin's *Loves of the Plants*. Saint-Pierre seems uncommonly attached to this plant, which, indeed, is not without both its beauties and uses to recommend it. He again mentions it in his third volume.—B. S. B.

ers, and in those which thrive in warm and sandy soils, as the radiated; such are the flowers of the dandelion. We likewise meet with them in the flowers of the *doronicum*, of the lettuce, of the succory; in the asters, in the meadow daisy, and others. But she has placed the original model of them under the Line, in America, in the broad sun-flower, which we have borrowed from Brasil.*

These being flowers whose petals have the least activity, are likewise those which are of the longest duration. Their attitudes are varied without end. Such as are horizontal, like those of the dandelion, close, it is said, toward the middle of the day; they are likewise such as are the most exposed to the action of the Sun, for they receive his rays from his rising to his setting.

There are others which instead of closing their petals invert them, and this produces nearly the same effect; such is the flower of the camomile. Others are perpendicular to the Horizon, as the flower of lettuce. The blue colour with which it is tinged, contributes farther towards weakening the rays of the Sun, which in this respect would act too vehemently upon it. Others have only four horizontal petals, such as the cruci-form; the species of which are very common in hot countries. Others bear around their disk flowrets which overshadow it; such is the blue bottle of the corn-field, which is represented on the plate in opposition to the daisy. This last flowers early in the Spring and the other in the middle of Summer.

We have said somewhat of the general forms of flowers, but we should never come to a conclusion were we to enter into a discussion of their various aggregations. I believe however that they may be referred to the plan itself of the flowers. Thus the umbelliferous flowers present themselves to the Sun under the same aspects as the radiated.

I must beg leave to recapitulate only what has been said respecting their reflecting mirrors. The reverberated perpendicular of a cone or ear form, collects on the antheræ of the flowers

* According to Linnæus, the sun-flower (*helianthus annuus*) is a native of Peru. But this superb vegetable was also found in Mexico, in Florida, in Virginia, &c. Of late, it has been discovered in the vast regions beyond the Mississippi. For ages, it has been cultivated as an article of food, by the native Americans. It is difficult to say, in what part of America, the plant was originally sown by the kind hand of Nature -- B. S. B

an arch of light of ninety degrees from the Zenith to the Horizon. It farther presents in the inequality of it's panels reflecting surfaces.

The conical reflector collects a cone of light of sixty degrees. The spherical reflector unites in each of it's five petals an arch of light of thirty six degrees of the Sun's course, supposing that luminary to be in the Equator.

The elliptical reflector collects a smaller quantity from the perpendicular position of it's petals ; and the parabolic reflector as well as that with plane mirrors, sends back the rays of the Sun divergently or in parallels.

The first form appears to be very common in the flowers of the Icy Zones ; the second in those which thrive under the shade ; the third in temperate latitudes ; the fourth in warm countries ; and the fifth in the Torrid Zone. It would likewise appear that Nature multiplies the divisions of their petals in order to diminish their action. Cones and ears have no petals. The convolvulus has but one ; rose formed flowers have five ; elliptical flowers, as the tulip and the illiaceous, have six ; flowers with plane reflectors, as the radiated, have a great number.

Farther, flowers have parts adapted to the other elements. Some are clothed externally with a hairy garment to shelter them from the cold. Others are formed to blow on the surface of the water ; such are the yellow roses of the nymphæa, which float on lakes, and accommodate themselves to the various movements of the waves without being wet by them, by means of the long and pliant stems to which they are attached. Those of the *valisneria* are still more artfully disposed. They grow in the Rhone, and would be there exposed to frequent inundation by the sudden swellings of that river, had not Nature given them stems formed like a corkscrew, which draw out at once to the length of three or four feet.

There are other flowers adapted to the winds and to the rains, as those of pease, which are furnished with little boats to cover and shelter the stamina and the embryos of their fruits.* Be-

* I am persuaded that the bearing of most flowers is adapted to the rains, and for this reason it is that many of them have the form of mufflers or ridges like little boats inverted, which shelter the parts of fecundation. I have remarked that many species of flowers possess the instinct, shall I venture to call it? of closing themselves when the air is humid and that the impregnation

sides, they have large pavilions, and rest on tails bent and elastic as a nerve ; so that when the wind blows over a field of pease, you may see all the flowers turn their back to the wind like so many weather cocks.

This class appears to be very generally diffused over places much exposed to the winds. *Dampier* relates that he found the desert shores of New-Guinea covered with pease, whose blossoms were red and blue. In our climates the fern, which crowns the summits of hills always battered with the wind and the rain, bears it's flower turned toward the Earth on the back of it's leaves. There are even certain species of plants the flowering of which is regulated by the irregularity of the winds. Such are those the male and female individuals of which grow on separate stems. Tossed hither and thither over the earth frequently at great distances from each other, the powder of the male could fecundate but a very few female flowers, unless at the season of their florification the wind blew from various quarters. Wonderful to be told ! There are invariable generations depending on the variableness of the wind. Hence I presume that in countries where the winds always blow from the same quarter, as between the Tropics, the species of florification must be uncommon ; and if it be found there at all, it must be regulated precisely according to the season when those regular winds vary.

It is impossible to entertain a doubt respecting those admirable relations, however remote they may appear, when we observe the attention with which Nature has preserved flowers from the shocks to which they might be exposed, from the winds themselves, upon their stems. She inwraps them for the most part in an integument, which Botanists call the *calix*. The more ramous the plant is the thicker is the calix of it's flower. She sometimes fringes it with little cushions and beards, as may be seen in the rose-bud. Thus the mother puts a pad round the head of her little child, to secure it against accidents from falling. Nature has so clearly marked her intention as to this,

Of fruit tree blossoms is injured much more by the rain than by the frost, This observation is of essential importance to gardeners, who frequently cause the flowers of their strawberry plants to miscarry by watering them. As far as I can judge, it would be better to water plants in blossom by little trenches according to the Indian method, rather than by aspersion.

in the case of the flowers of ramous plants, that she has deprived of this clothing such as grow on stems that are not branchy, and where they are in no danger from the agitation of the winds. This may be remarked with regard to the flowers of Solomon's seal, of the lily of the valley, of the hyacinth, of the narcissus, of most of the liliaceous, and of plants which bear their flowers isolated on perpendicular stems.

Flowers have farther very curious relations with animals and with Man, from the diversity of their configurations and from their smells. Those of one species of the orchis represent bugs, and exhale the same unpleasant odour. Those of a species of the arum resemble putrid flesh, and have the infection of it to such a degree, that the flesh-fly resorts thither to deposit her eggs. But those relations, hitherto very superficially investigated, do not come in so properly under this article; it is sufficient for me to have her demonstrated, that they actually have very clearly marked relations with the elements, and especially with the Sun.

When Botanists shall have diffused over this branch of the subject all the light of which it is susceptible, by examining their focuses, the elevation to which they rise above the ground, the shelter or the reflection of the bodies which are in their vicinity, the variety of their colours, in a word, all the means by which Nature compensates the differences of their several exposures, and they will no longer doubt about those elementary harmonies; they will acknowledge that the flower, far from presenting an unvarying character in plants, exhibits on the contrary a perpetual character of diversity. It is by this principally that Nature varies the species in the same genus of plant, in order to render it susceptible of fecundation on different sites. This explains the reason why the flowers of the great chesnut of India, but originally from America, are not the same with those of the European chesnut; and that those of the fullers-thistle, which thrives on the brink of rivers, are different from those of thistles which grow in lofty and dry places.

A very extraordinary observation shall serve irrefragably to confirm all that we have just now advanced: it is this, That a plant sometimes totally changes the form of it's flowers in the generation which reproduces it. This phenomenon greatly astonished the celebrated *Linnaeus* the first time that it was

submitted to his consideration. One of his pupils brought him one day a plant perfectly similar to the linarium, the flower excepted; the colour, the savour, the leaves, the stem, the root, the calix, the pericarpium, the seed, in a word, the smell, which is a remarkable circumstance, were exactly the same, only it's flowers were in form of a tunnel, whereas those of the linarium are gullet-formed. *Linnaeus* imagined at first that his pupil intended to put his knowledge to the test, by adapting a strange flower to the stem of that plant; but he satisfied himself that it was a real linarium, the flower of which Nature had totally changed. It had been found among other linaria, in an island seven miles distant from Upsal, near the shore of the sea on a sandy and gravelly bottom. He himself put it to the proof, that it re-perpetuated itself in this new state by it's seeds. He afterwards found some of it in other places: and what is still more extraordinary, there were among these last some which carried on the same stalk flowers tunnel-formed, and flowers gullet-formed.

He gave to this new vegetable the name of *pelorum* from a Greek word, which signifies prodigy. He afterwards observed the same variations in other species of plants, and among the rest in the eriocephalous thistle, the seeds of which produce every year in the garden of Upsal the fantastic thistle of the Pyrennées.* This illustrious Botanist accounts for these transformations, as being the effect of a mongrel generation, disturbed by the fecundating farina of some other flower in the vicinity. It may be so; to his opinion however may be opposed the flowers of the *pelorum* and of the linarium, which he found united on the same individual. Had it been the fecundation which transformed this plant, it ought to have given similar flowers in the whole individual. Besides, he himself has observed that there was not the slightest confusion in the other parts of the *pelorum*, any more than in it's virtues; but this must have been the case, as well as in the flower, had it been produced by a mixture of some strange breed. Finally, the *pelorum* re-produced itself by seed, which does not take place in any one mongrel species of animals.

* Upsalian Dissertation, for Dec. 1741: page 59, note 6

This sterility in mongrel branches is an effect of the sage consistency of Nature, who cuts off divergent generations, in order to prevent the primordial species from being confounded, and from at length disappearing altogether. As to the rest, I pry neither into the causes nor the means which she is pleased to conceal from me, because they far transcend my comprehension. I confine my enquiries to the ends which she kindly unfolds ; I confirm myself in the belief, from the variety of flowers in the same species and sometimes in the same individual, that they serve in certain cases as reflectors to vegetables, for the purpose of collecting, conformably to their position, the rays of the Sun on the parts of fecundation ; and in other cases as parasols, to put them under covert from excessive heat.

Nature deals by them nearly as she does by animals which are exposed to the same variations of Latitude. In Africa she strips the sheep of the woolly fleece, and gives her sleek smooth hair, like that of the horse : and to the North on the contrary she clothes the horse with the shaggy fur of the sheep. I have been an eye-witness of this double metamorphosis at the Cape of Good-Hope and in Russia. I have seen at Petersburg Norman and Neapolitan horses, whose hair naturally short, was so long and so frizzled in the middle of Winter, that you would have believed them covered with wool like sheep. It is not without reason, therefore, that the ancient proverb says : *GOD tempers the wind to the shorn lamb* : and when I behold his paternal hand varying the fur of animals conformably to the degree of heat and cold, I can easily believe that it varies in like manner the mirrors of flowers conformably to the Sun. Flowers then may be divided with relation to the Sun into two classes ; into reverberating flowers, and flowers in form of a parasol.

If there be any constant character in plants we must look for it in the fruit. It is thitherward that Nature has directed all the parts of vegetation, as to the principal object. That saying of WISDOM itself, *by their fruits ye shall know them*, is at least as applicable to plants as to the human species.

We shall examine therefore the general characters of plants, with relation to the places where their seeds are accustomed to grow. As the animal kingdom is divided into three great classes, quadrupeds, volatiles, and aquatics, relatively to the three elements of the Globe ; we shall in like manner divide

the vegetable kingdom into aerial or mountain-plants; into aquatics, or those of the shores; and into terrestrial, or those of the plains. But as this last participates of the two others, we shall not dwell upon it; for though I am persuaded that every species, nay that every variety may be referred to some particular site of the earth, and may grow there in its highest degree of beauty, it is sufficient to say as much of it here as may be necessary to the prosperity of a small garden. When we shall have traced invariable characters in the two extremities of the vegetable kingdom, it will be easy to refer to the intermediate classes those which are adapted to them. We begin with the plants of the mountains.

ELEMENTARY HARMONIES OF PLANTS WITH THE WATER AND
THE AIR, BY MEANS OF THEIR LEAVES AND FRUITS.

When the AUTHOR of Nature designed to clothe with vegetables even the highest and steepest pinnacles of the Earth, He first adapted the chains of mountains to the basons of the seas which were to supply them with vapours; to the course of the winds which were to waft them thither, and to the different aspects of the sun by which they were to be heated. As soon as those harmonies were established between the elements, the clouds ascended out of the Ocean, and dispersed themselves over the most remote parts of the Continents. There they distilled under a thousand different forms, in fogs, in mists, in dews, in rains, in snows. They descended from the heights of the Atmosphere in every possible variety of manner; some in a tranquil air, such as our Spring showers, came down in perpendicular drops as if they had been strained through a sieve; others driven by the furious winds, beat horizontally on the sides of the mountains; others fell in torrents, like those which for nine months of the year inundate the Island of Gorgona, placed in the heart of the Torrid Zone, in the burning Gulf of Panama. There were some which accumulated themselves in mountains of snow, on the inaccessible summits of the Andes, to cool by their effusions the Continent of South-America, and by their icy Atmosphere, the vast expanse of the Pacific Ocean. In a word, mighty rivers flowed over regions where the rain never descends, and the Nile watered the plains of Egypt.

Then **GOD** said : " Let the Earth bring forth grass, the herb yielding seed, and the fruit-tree yielding fruit after his kind, " whose seed is in itself upon the Earth." At the voice of the All-Mighty, the vegetables appeared with organs perfectly fitted to collect the blessings of Heaven. The elm arose on the mountains which skirt the Tanais, clothed with leaves in form of a tongue ; the tufted box started from the brow of the Alps ; and the prickly caper-tree from the rocks of Africa, with leaves hollowed into spoons. The pines of the sandy Norwegian hills attracted the vapours which were floating in the air, with their slim foliage disposed like a Painter's pencil ; the verbascum displayed it's broad leaves on the parched sand, and the fern presented on the hill it's fan-like foliage to the rainy and horizontal winds. A multitude of other plants, from the bosom of the rocks, from strata of flint, nay even from marble incrustations, drunk in the waters of Heaven by cornets, by sandals, and by cruets. From the cedar of Lebanon down to the violet which perfumes the grove, there was not one but what presented it's large goblet, or it's tiny cup, conformably to it's necessity, or it's station.

This adaptation of the leaves of plants in elevated situations, for receiving the descending distillations of the rain is varied without end ; but the character of it is discernible in most, not only in their concave forms, but likewise in a little canal, scooped out on the pedicle by which they are attached to their branches. It has something of a resemblance to that which Nature has traced on the upper lip of a Man, to receive the humours which descend from the brain. It is particularly perceptible on the leaves of artichokes, which being of the nature of thistles, agree with dry and sandy situations. These have besides, collateral awnings to prevent the loss of any of the water that falls from Heaven. Plants which grow in places very hot and very parched, sometimes have their stems or their leaves transformed entirely into a canal. Such are the aloes of the island of Zocotara, in the mouth of the Red-Sea, or the prickly taper of the Torrid Zone. The aqueduct of the aloes is horizontal, and that of the taper perpendicular.

What has prevented Botanists from remarking the relations which the leaves of plants have with the waters that feed and

refresh them, is their seeing them every where nearly of the same form, in the valleys, as on the heights; but though mountain-plants present foliages of every kind of configuration, you may easily discern from their aggregation in form of pencils or fans, from the gathering of the leaves, or from equivalent signs, that they are destined to receive the rain water, but chiefly from the aqueduct which I have just mentioned. This aqueduct is traced on the pedicle of the smallest leaves of mountain-plants; by means of it Nature has rendered the forms themselves of aquatic-plants susceptible of vegetation in the most parched situations.

The bulrush, for example, which is only a round and full straw that grows by the water-side, did not appear susceptible of collecting any humidity in the air, though it is very well suited to lofty situations, from it's capillaceous form, which like that of gramineous plants presents nothing to the wind to lay hold of.

In fact, if you consider the different species of rush which clothe the mountains in many parts of the world, such as that called *icho*, on the lofty mountains of Peru, the only vegetable almost that grows there, and those which thrive with ourselves in dry sands or on heights, you would at the first glance believe them similar to the rush of marshy places; but with a little attention, and not without astonishment, you will observe that they are hollowed into a furrow the whole of their lengthwise direction. They are like other rushes convex on one side, but they differ from them essentially, in that they are all concave on the other; I was enabled to distinguish by this same character the *spatha*, which is a rush of the mountains of Spain, and is now frequently manufactured at Paris into cordage for their draw-wells.

Many leaves even of the plants of the plains assume on their first springing up this form of little furrow, or spoon, as those of the violet, and of most gramineous plants. You may perceive in the Spring, the young tufts of these raising themselves upright toward Heaven, like paws, to catch the falling drops, especially when it begins to rain; but most plants of the plain lose their gutter as they expand. It has been bestowed on them only during the season when it was necessary to their growth. It is permanent only in the plants of the mountains. It is traced, as has been mentioned, on the pedicle of the leaves, and conducts

the rain-water into the tree from the leaf to the branch: the branch, by the obliquity of it's position, conveys it to the trunk, from whence it descends to the root, by a series of successive dispositions. If you pour water gently over the leaves of a mountain-shrub which are the farthest from it's stem, you will perceive it pursue the progress which I have just indicated, and not a single drop will be lost on the ground.

I have had the curiosity to measure in some mountain-plants, the inclination which their branches form with their stem; and I have found in at least a dozen different species, as in the fern, the thuia, and the like, an angle of about thirty degrees. It is very remarkable, that this degree of incidence is the same with that which is formed in a flat country, by the course of many rivulets and smaller rivers, with the great rivers into which they discharge themselves, as may be ascertained by reference to maps. This degree of incidence appears to be the most favourable to the efflux of many fluids, which direct themselves toward one single line. The same Wisdom has regulated the level of the branches in trees, and the course of the stream through the plains.

This inclination undergoes some varieties in certain mountain-trees. The cedar of Lebanon, for example, sends forth the lower part of it's branches in an upward direction toward Heaven, and lowers their extremities, by bending them downward to the Earth. They have the attitude of command which is suited to the King of vegetables, that of an arm raised up into the air, with the hand gently inclining. By means of the first disposition, the rain-water is conveyed along the sloping branch to the trunk; and by the second, the snows in the regions of which it takes delight to dwell, slide away from off it's foliage. It's cones have in like manner two different attitudes; for it inclines them at first toward the Earth, to shelter them at the season of their flowering; but when they are fecundated, it erects them toward Heaven. The truth of these observations may be confirmed by referring to a young and beautiful cedar in the Royal Garden, which, though a stranger, has preserved in the midst of our climate the air of a King, and the majestic port of Lebanon.

The bark of most mountain-trees is equally adapted for conducting the rain-water from the branches to the roots. That of

the pine is in large perpendicular ribs; that of the elm is cleft and chinked longitudinally; that of the cypress is spongy like the coat of flax.

The plants of mountains and of dry grounds have a farther character, which is in general peculiar to them: it is that of attracting the water which floats in the air in imperceptible vapours. The parietaria (pellitory) which has derived it's name from the latin word *pariete* (wall), because it grows on the sides of walls, has it's leaves almost always in a humid state. This attraction is common to most trees of the mountains. Travelers unanimously assure us that there is in the mountains of the Island of Ferro, a tree which furnishes every day to that island a prodigious quantity of water. The islanders call it *garoé*, and the Spaniards *santo*, from its singular utility. They tell us it is always surrounded with a cloud which distils copiously along it's leaves, and fills with water the large reservoirs which are constructed at the root of this tree, affording an abundant supply for the island.

This effect is perhaps somewhat exaggerated, though related in nearly the same terms by persons of different Nations: but I give full credit to the general fact. The real case I take to be this: it is the mountain which attracts from afar the vapours of the Atmosphere, and that the tree, situated in the focus of attraction, collects them around it.

Having frequently spoken in the course of this Work of the attraction of the summits of many mountains, the Reader perhaps will not be displeased if I present him, in this place, an idea of that branch of the hydraulic architecture of Nature. Among a great number of curious examples which I might produce to this purpose, and which I have collected, as an addition to my materials on the subject of Geography, I beg leave to present one, which I have extracted not from a systematic Philosopher, but from a simple and unaffectedly sprightly traveller of the last age, who relates things as he saw them, and without pretending to deduce consequences of any kind whatever. It is a description of the summits of the island of Bourbon, situated in the Indian Ocean, extending to the twenty first degree of South Latitude. I copy it from the writings of *M. de Villers*, who was then Governor of that island under the East India Company. It was published in the Journals of the first voyages

made by our French Navigators into *Arabia Felix*, about the year 1709, and given to the World by M. de la Roque. See that Work, page 201.

“Of those plains,” says M. de Villers, which are upon the mountains (of Bourbon), “the most remarkable, though no account has hitherto been given of it, is that to which they have given the name of the Plain of the Cafres, from a tribe of that People, slaves to the inhabitants of the Island, who went thither to conceal themselves, after they had run away from their masters. From the shore of the Sea you rise by a gentle ascent for seven leagues together, in order to reach this plain by the single path that leads to it, along the river of Saint Stephen : it is possible however to ride up on horseback. The soil is good and smooth to about a league and a half on this side the plain, planted with large and beautiful trees the foliage of which, as it falls, serves for food to the tortoises, which are to be found there in great numbers.

“The height of this plain may be estimated at two leagues above the Horizon ; it accordingly appears from below to be quite lost in the clouds. It’s circumference may be about four or five leagues. The cold is there insupportable, and a continual fog, which wets as much as rain, prevents your seeing objects ten paces distant ; as it falls in the night, you may see through it more clearly than by day : but then it freezes dreadfully, and in the morning before sun-rise the plain is frozen all over.

“But what strikes the eye of the beholder as very extraordinary, there are certain elevations of ground cut out almost in form of round columns, and of a prodigious height ; for they cannot be much lower than the turrets of Notre-Dame at Paris. They are put down like pins on the skittle-ground, and the resemblance is so strong, that you may easily mistake on reckoning them : they go by the name of *pitons* (pins). If you wish to stop by one of those eminences to take rest, such of your company as are not inclined to repose, but want to go forward, must not withdraw so far as two hundred paces, otherwise they will be in great danger of not finding again the point of separation, these pins are so many in number, all similar in form, and so much arranged in the same manner, that the Creoles who are natives there are themselves liable to mistake.

“ For this reason it is, that in order to prevent the unpleasant
 “ consequences of such an error, when a company of travellers
 “ take station at one of the pins, if they are disposed to make a
 “ farther excursion, they leave a person at the place of rendez-
 “ vous, to make a fire or raise a smoke which may serve to di-
 “ rect and bring back the strayers ; and if the *fog* be *so thick*,
 “ which is frequently the case, as to hinder the fire or the smoke
 “ from being seen, they provide themselves with a kind of large
 “ shells, one of which is left with him who keeps station at the
 “ pin ; another is carried off by the separating party ; and when
 “ they wish to return some one blows violently into the shell as
 “ into a trumpet, which emits a very shrill sound, and is capa-
 “ ble of being heard at a great distance ; this is answered by
 “ the other, and being repeated as often as is necessary, they
 “ are easily recovered from straying, and collected at the point
 “ of departure. Without such precautions the traveller might
 “ be bewildered.

“ In this plain are many aspin-trees, and they are always
 “ green. Other trees are covered with a moss of more than a
 “ fathom in length around their trunk and large branches. They
 “ are withered, without foliage, and so impregnated with mois-
 “ ture, that it is impossible to make them take fire. If with
 “ much difficulty you are able to kindle some of the smaller
 “ boughs, it is only a dark fire without flame, which emits a
 “ reddish smoke that defiles the meat without roasting it.
 “ You can hardly find a spot in this plain on which to kindle a
 “ fire, unless by looking about for some small elevation round
 “ the peaks ; for the soil of the plain is so humid that the water
 “ every where spouts out, so that you are continually in mud,
 “ and moistened up to the calf of the leg. Great numbers of
 “ blue birds are to be seen there nestling in the herbage, and
 “ among the aquatic ferns. This plain was unknown before the
 “ desertion of the Cafres. In order to get down you must re-
 “ turn by the same way that you ascended, unless you choose
 “ to run the risk of another path, which is very rough and dan-
 “ gerously steep.

“ From the plain of the Cafres may be seen the mountain
 “ known by the name of *Trois Salazes*, from the three points of
 “ that rock, the loftiest in the Island of Bourbon. All it's ri-

“vers issue from thence, and it is so steep on every side that there is no possibility of climbing it.

“There is besides in this island another plain, called the plain of Silaos, higher than that of the Cafres, and of no greater value ; it is extremely difficult to get up to it.”

In the lively description of our Traveller we must overlook some errors in Physics, such as his assigning to the Plain of the Cafres an elevation of two leagues above the Horizon. He had not learned from the barometer and thermometer that there is no such elevation on the face of the Globe, and that at the perpendicular height of one league only, the freezing point is invariable. But from the thick fog which surrounds those peaks, from that continual mist which wets as much as rain, and which falls during the night, it is evidently perceptible that they attract to them the vapours which the Sun raises out of the Sea in the day-time, and which disappear in the night. Hence is formed that sheet of water which inundates the Plain of the Cafres, and from which most of the brooks and rivulets that water the island take their rise. You may equally distinguish a vegetable attraction in those ever-green aspens, and those other trees at all times humid, which it is impossible to kindle into flame.

The island of Bourbon is almost round, and rises out of the Sea in the shape of half an orange. On the highest part of this hemisphere are situated the Plains of Silaos and of the Cafres, where Nature has placed those labyrinths of peaks continually involved in fogs, planted like nine pins, and elevated like so many turrets.

Did time and room permit, I could make it evident that there are a multitude of similar peaks on the chains of lofty mountains, of the Cordeliers, of Taurus and others, at the centre of most islands, without admitting the possibility of supposing, though the opinion be current, that they are the remains of a primitive Earth raised to that height ; for what must have become, as has been already demanded, of the wreck of that Earth, the pretended testimonies of which arise on every hand over the surface of the Globe ? I could demonstrate that they are placed in aggregations, and in situations adapted to the necessities of the countries of which they are in some sense the reservoirs ; some in a labyrinth, as those of the Island of Bour-

bon, when they are on the summit of a hemisphere, from whence they are destined to distribute the waters of Heaven in every direction ; others in the form of a comb, when they are placed on the extended crest of a chain of mountains, as the pointed peaks of the chain of Taurus and of the Cordeliers ; others grouped into pairs, into threes, according to the configuration of the territory which they are to water. They are of so many forms, and of different constructions : some of them are incrustations of earth, as those of the Plain of the Cafres, and of some of the Antilles Islands, and which are besides so steep as to be entirely inaccessible. Those incrustations of earth demonstrate that they have at once fossil and hydraulic attractions.

There are others which present long needles of solid and naked rock ; others are of a conical form ; others are flattened as a table, such as that of Table-mountain at the Cape of Good-Hope, where you may frequently see the clouds accumulate and spread like a table-cloth. Some are not apparent, but entirely involved in the side of mountains or in the bosom of plains. They are all distinguishable by the fogs which they attract around them, and by the sources which emit their streams in the vicinity. Nay you may rest assured that there is no source but in the neighbourhood of some quarry of hydro-attractive, and for the most part of metallic stone. I ascribe the attraction of those peaks to the vitreous and metallic bodies of which they are composed : and I am persuaded it might be possible to imitate this architecture of Nature, and to form by means of the attraction of such stones, fountains of water in the most parched situations. In general vitreous bodies and stones susceptible of polish are very proper for this purpose ; for it is observable that when water is diffused in great quantities through the air, as at the time of a general thaw, it is first attracted, and attaches itself to the glass-windows and the polished stones of our houses.

I have frequently seen on the summit of the mountains in the Isle of France, effects similar to those of the peaks of the Plain of the Cafres in the Island of Bourbon. The clouds collect there incessantly around their peaks, which are steep and pointed like pyramids. Some of those peaks terminate in a rock of a cubical form, which crowns them like a chapter. Such is that which they call *Piterbooth*, after the name of a Dutch Admiral ; it is one of the loftiest in the Island.

Those peaks are formed of solid rock, vitrifiable and mixed with copper : they are real electrical needles both in form and substance. The clouds perceptibly deviate from their course to collect upon them, and there accumulate sometimes to such a degree that the pinnacles become totally invisible. They thence descend into the cavity of the vallies, along the declivities of the forests, which likewise attract them, and there dissolve into rain, frequently forming rainbows on the verdure of the trees. This vegetable attraction of the forests of that island is in such perfect harmony with the metallic attraction of the peaks of it's mountains, that a field situated in an open place in their vicinity very often suffers for want of rain, whereas it rains the whole year round in the woods, which are not above a gun-shot distant. It was by the destruction of part of the trees that clothed the heights of the island that most of the brooks which watered it have been dried up : and now nothing remains of them but the empty channel.

To the same injudicious management I ascribe the sensible diminution of a considerable part of the rivers of Europe both great and small ; as is evident from a simple inspection of their ancient bed, which is much broader and deeper than the mass of water at this day transmitted by them to the Ocean. Nay I am persuaded that to this cause we must ascribe the dryness of the more elevated provinces of Asia, those of Persia in particular, the mountains of which have no doubt been stripped of their trees by the first tribes who inhabited them. I am decidedly of opinion, that were we to plant in France mountain-loving trees on the high grounds, and at the sources of our rivers, their ancient volume of water might be restored, and many rivulets might be made to re-assume their current through our plains, though they have a long time since ceased to flow. It is neither among the reeds, nor in the depth of the valley that the Neriads conceal their exhaustless urns, as Painters represent them, but at the summit of rocks crowned with wood, and towering to the Heavens.

There is not a single vegetable, the leaf of which is disposed to receive the rain-water on the mountains, whose seed is not formed in a manner the best adapted to raise itself thither. The seeds of all mountain-plants are volatile. By inspecting their leaves it is possible to ascertain the character of their



LEAVES WITH AN AQUEDUCT, AND VOLATILE FRUITS OF MOUNTAIN VEGETABLES.

Leaves and Seeds of the Mountain Maple.



Spartina
or rush of the Spanish
Mountains

Rush of the
Marshes.

Leaf and Cone of the
Cedar of Lebanon



Stump of the
Spartina with
its center.

Leaf and Seeds
of the
Dandelion.

Full Stump
of the Rush
of the Marshes



Kernel of the Cedar
attached to its wing.



grains, and by inspecting the grains that of their leaves, and thence to infer the elementary character of the plant. By mountain-plants I here wish to be understood to mean all those which grow in sandy and parched situations, on hillocks, in rocks, on steep ridges by the highway's side, in walls, and, in one word, at a distance from water.

The seeds of thistles, of blue-bottles, of dandelion, of succory, and many others, are furnished with pinions, with plumes, with tufts, and various other means of rising, which convey them to prodigious distances. Those of the grasses, which likewise travel very far, are provided with a light chaffy coat, and with bearded husks. Others, such as those of the yellow gilly-flower, are cut into thin scales, and fly by the slightest breath of the wind, and plant themselves in the most inconsiderable crevice of a wall. The seeds of the largest mountain-trees are no less volatile. That of the maple has two membranous pinions similar to the wings of a fly. That of the elm is cased in the midst of an oval thin leaf. Those of the cypress are almost imperceptible. Those of the cedar are terminated by broad and thin plates, which in their aggregated state compose a cone. The grains are in the centre of the cone; and when arrived at maturity, the thin membranes to which they adhere separate from each other like the cards in a pack, and each of them flies off with it's own little kernel. (*See the annexed plate.*)

The seeds of mountain-plants which appear too heavy for flying, are furnished with other resources. The pease of the balsamine have pods whose elasticity darts them to a considerable distance. There is likewise a tree in India,* the name of which I do not now recollect, that in like manner discharges it's seeds with a noise like that of a musket fired off. Those which have neither tufts, nor pinions, nor springs, and which from their weight seem condemned to remain at the foot of the vegetable which produced them, are in very many cases those which travel the farthest. They fly off with the wings of a bird. It is thus that a multitude of berries and shell-fruits resow themselves. Their seeds are inclosed in stony incrusta-

* I presume the author here alludes to the *hura crepitans* of the West-Indies, a tree there called sand-box.—B. S. B.

tions not capable of being digested. They are swallowed by the birds, who carry them off and plant them in the cornices of towers, in the clefts of rocks, on the trunks of trees, beyond rivers, nay beyond oceans. By such means it was that a bird of the Moluccas re-peopled with the nutmeg plant, the desert islands of that archipelago, in defiance of all the efforts of the Dutch, who destroy those trees in every place where they cannot be subservient to their own commerce.

This is not the place for bringing forward the relations which vegetables have no animals. It is sufficient to observe as we go along that most birds resow the vegetable which feeds them. Nay we find, without going from home, quadrupeds which convey to a great distance the seeds of the grasses. Such among others as do not chew the cud, horses for instance, whose dung is hurtful to the meadows, for an obvious reason, they introduce into them a variety of foreign herbs, as the heath and the short furze, the seeds of which they are unable to digest. They resow, besides, a great many others, which adhere to their hair, by the motion of their tail simply. There are quadrupeds of small size, such as the dormouse, the hedge-hog, and the marmot, which convey to the most elevated regions of the mountains, acorns, beech-mast, and chesnuts.

It is singularly worthy of remark that volatile seeds are produced in much greater number than those of other species ; and in this we are called upon to admire the intelligence of that Providence which foresaw every thing, and arranged all accordingly. The elevated situations for which they are destined, were exposed to be speedily stripped of their vegetables, by the declivity of their soil, and by the rains, which have a continual tendency to lower them. By means of the volatility of grains, they are become of all the places of the Earth the most prolific in plants. In the mountains is deposited the Botanist's treasure.

It cannot be too frequently repeated, The remedies provided by Nature always surmount the obstacles which she has opposed ; and her compensations ever exceed her gifts. In truth, if you except the inconveniences of declivity, a mountain presents to plants the greatest variety of exposures. In a plain they have the same Sun, the same degree of humidity, the same soil, the same wind ; but if you ascend a mountain, situated in

our Latitude only twenty-five fathoms of perpendicular height, you change your climate as much as if you travelled twenty-five leagues northward ; so that a mountain of twelve hundred fathoms perpendicular height, would present us with a scale of vegetation as extensive as that of twelve hundred leagues along the Horizon, which is nearly our distance from the Pole : both the one and the other would terminate in a region of perpetual ice. Every step we take upon a mountain, whether ascending or descending, gives us a change of Latitude ; and if we encompass it round and round, every step changes our Longitude. We shall fall in with points where the Sun rises at eight o'clock in the morning ; others at ten o'clock ; others at noon. We should find an infinite variety of exposures ; of cold toward the North, of heat to the South, of rain to the West, of drought to the East ; without taking into the account the different reflections of heat in sands, rocks, bottoms of vallies, and lakes, which modify them a thousand various ways.

We must proceed farther to observe ; and who can do it without profound admiration ? that the season of the maturity of most volatile seeds takes place toward the commencement of Autumn ; and that from an effect of the universal Intelligence, which constrains all the parts of nature to act in concert. Then it is that we have the most violent gales of wind, about the end of September or beginning of October, called the equinoctial winds. These winds blow in all parts of the Continents, from the bosom of the seas to the mountains which are in correspondence with them. Not only do they convey thither the volatile grains which have then attained to a state of maturity, but likewise blend with these thick clouds of dust, which they carry off from lands dried up by the burning heats of Summer, and particularly from the shores of the Sea, where the incessant motion of the billows, which there break, and continually toss the pebbly strand backward and forward, reduce the hardest bodies to an impalpable powder.

Those emanations of dust are in many places so copious, that I could produce a variety of instances of vessels covered with them, as they were crossing gulfs, though more than six leagues distant from land. They are so troublesome in the loftier provinces of Asia, that all travellers who have visited Pekin assure us it is impossible to walk the streets of that city, for a considerable

rable part of the year, without having the face veiled. Thus there are rains of dust which repair the summits of the mountains, as there are rains of water which feed their sources. Both the one and the other issue from the Sea, and return to it by the course of the rivers, which are perpetually conveying thither their constant tribute of waters and sands. The maritime winds unite their efforts toward the autumnal equinox, transport from the circumference of the Continents, to mountains the most remote from them, the seeds and the manure which had flowed from thence, and sow meadows, groves, and forests on the sides of precipices, and on the most inaccessible peaks. Thus the leaves, the stems, the seeds, the birds, the seasons, the seas, and the winds, concur in a wonderful manner to keep up the vegetation of the mountains.

I have been mentioning the relations of plants to mountains; I am mortified that it is not in my power here to insert the relations which mountains themselves have with plants, according to my original intention. All that I can at present say on this subject is, that so far are mountains from being the productions of a centrifugal force, or of fire, or of earthquakes, or of water courses, I know of at least ten different species, each of which has a configuration the most perfectly adapted for keeping up in every particular Latitude the harmony of the elements relatively to vegetation. Each of them has moreover vegetables and quadrupeds peculiar to itself, and which are not elsewhere to be found. This proves to a demonstration that they are not the work of chance. Finally, among that inconceivable number of mountains which cover the greatest part of the five Zones, and especially the Torrid and the Icy Zones, there is but one single species, the least considerable of all, which presents to the water courses projecting and retreating angles in correspondence. This however is no more their work than the bason of the seas is itself the work of the Ocean. But this interesting subject, of an extent too considerable to admit of it's being here introduced, belongs, besides, to the province of Geography.

Let us now proceed to display the harmony of aquatic plants.

These have dispositions entirely different in their leaves, the bearing of their branches, and above all in the configuration of their seeds. Nature, as has already been observed, in order to vary her harmonies, only employs in very many cases positive

and negative characters. She has bestowed an aqueduct on the pedicle of the leaves of mountain-plants; she withdraws it from those which grow by the side of the waters, and transforms them into aquatic plants. These, instead of having their leaves hollowed out into gutters, are cloathed with leaves smooth and sleek, such as the corn flag, which bears them in form of a poignard's blade, or swelling in the middle like a sword-blade, as those of the species of reed called typha, that common sort, the stem of which the Jews put into the hand of JESUS CHRIST. Those of the nymphæ or plane, and rounded in form of a heart. Some of these species affect their forms, but their long tails are uniformly destitute of a canal. Those of the bulrush are round like a pipe. There is an endless variety of rushes on the brink of morasses, rivulets, and fountains. You will find them of all sizes, from those which have the fineness of a hair up to the species which grow in the river of Genoa as large as a cane, Whatever difference there may be in the jointing of their stalks and of their panicles, they all have in their plan a round or elliptical form. You will find those species alone which grow in parched situations to be fluted and hollowed on their surface. When nature intends to render aquatic plants susceptible of vegetation on the mountains, she bestows aqueducts on their leaves; but when on the contrary she means to place mountain-plants by the water's-side, she withdraws it. The aloes of the rock has it's leaves hollowed into a scoop; the aloes of the water has them full. I am acquainted with a dozen species of mountain-fern, every one of which has a small fluting along it's branches, and the only species of the marshes which I know wants it. The bearing of it's branches is likewise very different from that of the others. The first rears them toward Heaven the last bears them almost horizontally.

If the leaves of mountain plants are constructed in the best manner possible for collecting at their roots the waters of Heaven, which they have not always at command; those of aquatic plants are frequently disposed in such a manner as to remove them, because they are destined to grow in the bosom of water, or in it's vicinity. The leaves of trees which love the water's side, as the birch, the aspin, and the poplar, are attached to long and pendant tails. There are others which bear their leaves disposed in form of tiles, as the great chesnut of India and the

walnut. Those of plants which grow in the shade, around the trunk of trees, and which derive by their roots the humidity collected by the foliage of the tree, as the french-bean and the convolvulus, have a similar bearing. But those which grow entirely under the shade of trees, and which have scarcely any roots, as mushrooms, have leaves that so far from pointing toward Heaven are turned downward to the earth. The greatest part are formed on the upper side into a thick parasol, to prevent the Sun from drinking up the moisture of the soil in which they grow; and they are divided on the under side into thin leafy plates, for receiving the vapors which exhale from the ground, nearly as those of the horizontal wheel of a fire-engine receives the steam of the boiling water which makes it to turn about. They have besides several other means of watering themselves by these exhalations. There are many numerous species lined with tubes, others are stuffed with sponges. There are some whose pedicle is hollow inwardly, and which bearing a chapter a-top, there collect the emanations of their soil as in an alembic. Thus there is not a particle of vapour in the Universe that goes to waste.

What has just now been said of the inverted forms of mushrooms, of their leafy plates, of the tubes and sponges with which they are lined, for receiving the vapours exhaled from the ground, confirms what was advanced respecting the use of the leaves of mountain-plants hollowed into gutters, or constructed into the form of a pencil, or of a fan, for receiving the waters of Heaven. But aquatic plants which had no need of such recipients, because they thrive in water, have, if I may so express myself, a repulsive foliage. I shall here present an object of comparison, calculated to produce conviction of the truth of those principles: for example, the mountain-box-tree and the caper-plant of the rocks, have their leaves hollowed into a spoon form, with the concavity turned toward Heaven; but the *vaccinium* of the marshes, (cranberry) or *vaccinia palustris*, which is likewise furnished with concave leaves, bears them inverted, with the cavity turned toward the earth. From this negative character, I was enabled to distinguish, as a plant of the marshes, a very rare plant in the Royal Garden, which I saw for the first time. It is the *ledum palustre*, which grows in the marshes of the Labrador country. Its leaves, formed like little coffee-

spoons, are all inverted ; their convex side being turned toward Heaven. The water-lentil of our marshes, as well as the typha of our rivers, has the middle of it's leaf swelled.

Botanists, on observing leaves nearly similar to plants on the brink of the water, and on the heights of mountains, never entertained a suspicion that they could answer purposes so different. Many of them no doubt are persons of profound erudition ; but their learning is rendered entirely useless to them, because their method constrains them to proceed in one single track, and their system indicates to them only one kind of observations. This is the reason that their most numerous collections frequently present nothing but a mere vocabulary. The Study of Nature is spirit and intelligence simply. Her vegetable order is an immense volume, of which plants form the thoughts, and the leaves of those very plants the letters. Nay there is not a very great number of primitive forms in the characters of this alphabet : but by means of their various assemblages she forms, as we do with ours, an infinite number of different thoughts. As it is with language, in order totally to alter the meaning of an expression, all that she has in many cases to do is to change an accent. She places rushes, reeds, arums with a sleek foliage and a full pedicle, on the banks of rivers : she traces an aqueduct in the leaf, and transforms them into rushes, reeds, and arums of the mountains.

We must at the same time be carefully on our guard against generalizing those means ; otherwise they will quickly betray us into a misapprehension of her procedure. For example, certain Botanists having suspected that the leaves of some plants might very well be adapted for collecting the rain water, believed that they had a perception of this use in that of the *dipsacus*, or fullers-thistle. It was very easy to fall into a mistake here, for the leaves are opposite, and meet at their bases ; so that after it has rained they present reservoirs, which contain one with another a good half-glass of water, and which are disposed in stories along it's stem. But they ought to have considered, first, that the *dipsacus* grows naturally on the brink of waters, and that Nature does not bestow cisterns of water on aquatic plants. This would be, according to the proverb, to carry water to the river. Secondly, they might have observed that the tiers formed by the opposite leaves of the *dipsacus*, so

far from being reservoirs, are on the contrary discharges, which convey off the rain water from it's roots, to the distance of nine or ten inches on every side by the extremities of it's leaves. They resemble, in some respects, the gutters which project from the roofs of our houses, or those which are formed by the corners of our hats, which serve to carry away the rain water from the body and not to throw it inward. Besides, the water which remains in the cavity of the leaves of the *dipsacus* never can get down to the root of the plant, for it is detained there as at the bottom of a vase. It would not even be proper for moistening it, for *Pliny* insists that it is brackish. The birch-wort which grows in the trembling and frothy marshes of Canada, carries at it's base two leaves, formed like the halves of a trumpet sawed asunder lengthwise. They are both concave, but have at the extremity that is farthest from the plant a kind of bill shaped like a spout. The water which remains in the receivers of these aquatic plants, is perhaps destined to supply drink to the small birds, which sometimes find themselves not a little embarrassed how to come at it in the time of inundations.

It is necessary carefully to make a distinction between the elementary and the relative characters of plants. Nature obliges the man who studies her not to hold to external appearances, and in order to form his understanding, she makes him rise from the means which she employs to the ends which she proposes. If certain aquatic plants seem to present in their foliage some of the characters of mountaineers, there are upon the mountains some which seem to present characters similar to those of the waters ; such, for example, is the broom. It bears leaves so small and so few in number, that they appear insufficient for collecting the water necessary to it's growth, and so much the more that it thrives in soils the most parched. Nature has indemnified it in another manner. If it's leaves are small it's roots are very long. They go in quest of coolness to a great distance. I have seen some of them extracted from the earth, which were more than twenty feet in length, and it was necessary after all to break them off, it being impossible to reach the extremities. This prevents not the scanty leaves from exhibiting the mountain-character ; for they are concave, they point toward Heaven, and are lengthened out like the under bill of a bird.

The greatest part of aquatic vegetables throw the water off from them, some by their port; such as the birch, the branches of which, so far from rearing themselves toward Heaven, fall downward in form of an arch. The same thing may be affirmed of the great chesnut and of the walnut, unless these trees should have changed their natural attitude by growing in thirsty situations. Their bark is usually sleek, as that of the birch, or scaly like that of the chesnut; but not hollowed into canals, as that of the elm or the mountain pine. Others have in themselves a repulsive quality: such are the leaves of the nymphæa, and of several species of colewort, on which the drops of water collect into globules like the particles of quicksilver. Nay there are some which it is extremely difficult to moisten, such as the stems of many species of capillary plants. The laurel, we are told, carries it's repulsive quality to such a degree as to repel the thunder. If this quality, so highly extolled by the Ancients, is really possessed by the laurel, we must undoubtedly ascribe this to it's nature as a fluviatic plant. The laurel grows in abundance on the banks of the rivers of Thessaly. A traveller, whose name is the *Sieur de la Guilletière*,* says, in a relation written in a very lively and agreeable manner, that he never saw any where such fine laurels as along the side of the river Peneus. Hence perhaps was suggested the idea of the metamorphosis of *Daphne*, the daughter of that river-deity, transformed by *Apollo* into a laurel.

This repulsive property of certain trees, and of some aquatic plants, induces me to think that they might be employed around our habitations, as a security against thunder-storms, and that in a manner more certain, and much more agreeable than electrical conductors, which dissipate only by attracting them to the neighbourhood.† They might farther be very advantageously employed for drying marshy grounds; as the attractive quali-

* See the Voyage to Lacedemon, by the *Sieur de la Guilletière*.

† I am really inclined to the opinion, that there is a great difference in different trees, in regard to their power of attracting and conducting the electrical fluid: and hence, during thunder-storms, our houses and persons are more secure with one than with another species of tree in the immediate vicinity. On this subject, curious if not important, I composed a memoir several years ago, and long before I had read any part of the *Studies* of Saint-Pierre. I have found, that the black-walnut, (*juglans nigra*,) the common

ties of many mountain-vegetables might be used in forming fountains upon heights, by collecting there the vapours which float in the air. There is not perhaps an infectious morass on the Globe, except in places where men have injudiciously destroyed the plants whose roots absorbed the humidity of the Earth, and whose foliage repelled that of the Heavens.

I pretend not to affirm however that the foliage of aquatic plants has no farther uses: for where is the man who has entered into the endless views of Nature? "To whom hath the root of wisdom been revealed? or who hath known her wise counsels?" *Radix sapientiæ cui revelata est? et astutias illius quis agnovit?* ‡ In general, the leaves of aquatic plants appear, from their extreme mobility, very much adapted to the purpose of renewing the air of humid places, and of producing by their movements, that drying of the ground to which I have just alluded. Such are those of reeds, of poplars, of aspens, of birches, and even of willows, which are sometimes in motion though there is not the slightest degree of wind perceptible.

It is farther remarkable that most of these vegetables emit a very pleasing smell; among others, the poplar and the birch, especially in the Spring: and that a great number of aromatic plants thrive by the water's-side, as mint, sweet marjoram, ciperus, the sweet-smelling rush, the iris, the *calamus aromaticus*: and in the Indies, the spice plants, such as the cinnamon-tree, the nutmeg, and the clove. Their perfumes must contribute very powerfully to diminish the mephitic exhalations which are natural to marshy and humid places. They have likewise many uses relatively to animals, such as affording a shade to the fishes which resort thither in quest of a shelter from the scorching heat of the Sun.

But one conclusion we may certainly deduce in favour of our improvements in culture from the observations now made; namely this, That in the cultivation of plants, the pedicle of

American chesnut, (*castania americana*), the tulip-tree, (*liriodendron tulipifera*), and some others, are much more frequently struck, and shattered to pieces, by the lightning, than the common tupelo, (*nyssa integrifolia*), the beech, (*fagus ferruginea*), the occidental plane-tree, (*platanus occidentalis*), &c. It is asserted that the tupelo is never injured by the lightning.—I design to publish my memoirs on this subject.—B. S. B.

‡ Ecclesiasticus, chap. i. ver. 6

whose leaves presents no impress of a canal, it is necessary to water them copiously ; for in this case they are naturally aquatic. The nasturtium, the mint, and the sweet-marjoram, consume a prodigious quantity. But when plants are provided with a canal, they must be watered more sparingly, for this demonstrates them to be originally natives of the mountains. The deeper this canal is the less artificial watering do they require. Every gardener knows that if you frequently water the aloes, or the taper of Peru, you kill them.

The seeds of aquatic plants have forms not less adapted than those of their leaves to the places where they are destined to grow ; they are all constructed in a manner the most proper for sailing off. Some of them are fashioned into the figure of shells, others into boats, rafts, skiffs, single and double canoes, similar to those of the South-Seas. I can have no doubt that by an attentive study of this part alone, a great number of very curious discoveries might be made, respecting the art of crossing currents of every sort ; and I am persuaded that the first men, who were much better observers than we are, copied their different methods of travelling by water after those models of Nature, of which we with all our pretensions to discovery are but feeble imitators.

The aquatic or maritime pine has it's kernels inclosed in a kind of little bony shoes, notched on the under side, and covered over on the upper with a piece resembling a ship's hatch. The walnut, which delights so much in the banks of rivers, has it's fruit contained in two little boats whose apertures are perfectly fitted to each other. The hasel, which becomes so bushy on the brink of rivulets ; and the olive, which is enamoured of the sea-shore to such a degree that it degenerates in proportion as you remove it thence, carry their seed inclosed in a species of little casks capable of holding out the longest voyages. The red berry of the yew, whose favourite residence is the cold and humid mountain by the side of a lake, is hollowed into a little bell. This berry on dropping from the tree, is at first carried down by it's fall to the bottom of the water : but it returns instantly to the surface, by means of a hole which Nature has contrived, in form of a navel, above the seed. In this aperture is lodged a bubble of air, which brings it back to the surface of the water, by a mechanism more ingenious than that of the diver's-bell in

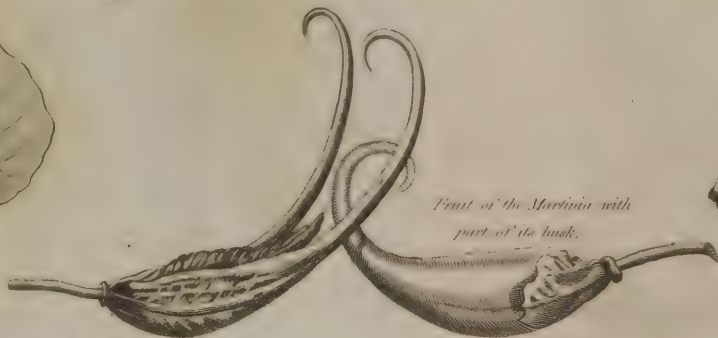
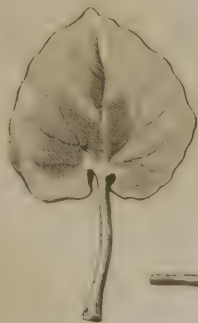
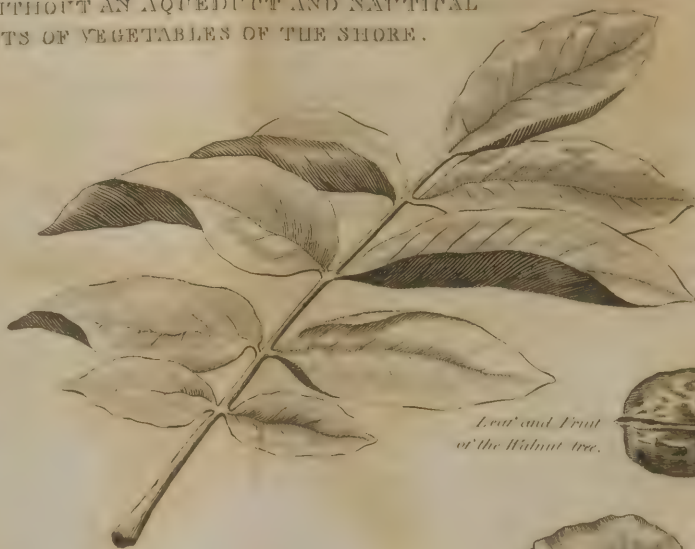
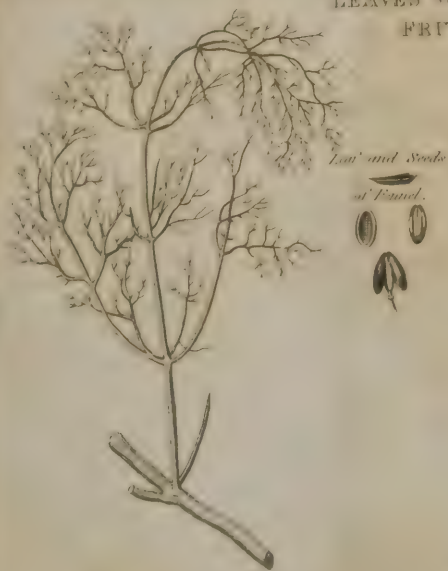
this, that the vacuum of the diving-bell is undermost, and in the berry of the yew it is uppermost.

The forms of the seeds of aquatic-plants are still more curious ; for universally, Nature redoubles her skill and exertions in favour of the little and the weak. That of the bulrush resembles a lobster's eggs ; that of fennel is a real canoe in miniature, hollowed in the middle, with both ends raised into a prow. There are others grooved into each other, resembling pieces of wood disposed for a float and worm-eaten ; such are those of the horned poppy. Those which are destined to thrive on the brink of waters destitute of current are wafted by sails ; such is the seed of a scabious plant of our own country which grows on the border of morasses. Besides the difference of this from the other species of scabious, whose seeds are crowned with pronged hairs, in order to fasten themselves on the hairs of the animals which transplant them, the one last-mentioned is overtopped by a half bladder, open and resting on it's summit like a gondola. The half-bladder serves it at once as a sail by water, and as a vehicle by land. These means of natation, though endlessly varied, are common in all climates to the grains of aquatic plants.

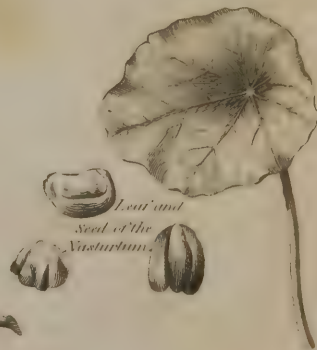
The almond of the river of the Amazons, known by the name of *totoea*, is inclosed in two shells, exactly similar to those of an oyster. Another fruit on the strand of the same river, which abounds in almond-trees, has a perfect resemblance in colour and form to an earthen pot, with it's little lid ;* it goes by the name of the monkey's porridge-pot. Others are formed into large bottles as the fruit of the great gourd. There are seeds incrustated in a coat of wax, which makes them float, such are the berries of the wax-tree, or royal pimenta of the shores of Louisiana. The formidable apple of the mancenilla, which grows on the sea-shore of the islands situated between the Tropics, and the fruit of the manglier, which grows there actually in the salt water, are almost ligneous. There are others with shells similar to the sea-urchin, without prickles. Many are coupled and perform their voyage like the double canoc, or balse, of the South-Sea. Such is the double cocoa of the Sechelles islands.

* See engravings of most of those seeds, in *Jean de Laet's History of the West-Indies*

LEAVES WITHOUT AN AQUEDUCT AND NAUTICAL
FRUITS OF VEGETABLES OF THE SHORE.



Leaf and Fruit of the Martima
on the Shores of la Vera Cruz.



If you examine the leaves, the stems, the attitudes, and the seeds of aquatic plants, you will always remark in them characters relative to the places where they are destined to grow, and in harmony with each other ; so that if the seed has a nautical form, it's leaves are deprived of an aqueduct ; just as in mountain-plants, if the grain is volatile, the pedicle of the leaf, or the leaf altogether, presents a channel.

I shall assume, as an instance of the nautical harmonies of plants, the nasturtium, with which every one is acquainted. This plant, which bears flowers so agreeable, is one of the cresses of the rivulets of Peru. It must be observed first, that the foot-stalks of it's leaves have no conduit, like those of all aquatic plants ; they are inserted in the middle of the leaf, which they support like an umbrella, to ward off from them the water which falls from Heaven. It's seed when fresh has exactly the form of a boat. The upper part is raised into a slope like a bridge to let the water run off ; and you distinguish perfectly in the lower part a poop and a prow, a keel and a bottom. (*See the annexed plate.*) The little furrows of the seed of the nasturtium are characters common to most nautical grains, as well as the triangular forms, and those of the kidney or keel. Those furrows undoubtedly prevent them from rolling about in all directions, constrain them to floating along lengthwise, and give them the direction the best adapted to the track of the water, and to the passage of the narrowest straits. But they have a character still more general ; it is this, that they swim in their state of maturity, which is not the case with grains destined to grow in the plains, such as pease and lentils, which sink to the bottom.

Some species of these nevertheless, such as the french-bean, sink at first to the bottom, and rise to the surface when penetrated with the water. Others, on the contrary, float at first and sink afterward. Such is the Egyptian bean, or the seed of the colocasia, which grows in the waters of the Nile. In order to sow it you are under the necessity of rolling it up in a ball of earth, and in that state it is thrown into the water. Without this precaution not one would remain on the shores where you would wish it to grow. The natibility of aquatic seeds is undoubtedly proportioned to the length of the voyages which they have to perform, and to the different gravity of the waters in

which they are destined to swim. There are some which float in sea-water and sink in fresh, which is lighter than sea-water by one thirty-second part : such precision is in the balancing of Nature ! I believe that the fruit of the great India chesnut, which thrives on the shores of the salt creeks of Virginia, are in this situation. In a word, I am so entirely convinced of all the relations which Nature has established among her Works, as to conclude, that the time when the seeds of aquatic plants drop, is regulated in most cases by that of the overflowing of the rivers where they grow.

It is a speculation well worthy of the attention of the philosophic mind, to trace those vegetable fleets sailing along night and day with the current of the rivulets, and arriving, undirected by any pilot, on unknown regions. There are some which, by the overflowing of the waters, now and then lose themselves in the plains. I have seen them sometimes accumulated upon each other in the bed of torrents, presenting around the pebbles where they had germinated, waves of verdure of the most beautiful sea-green. You would have thought that *Flora*, pursued by some River-god, had dropped her basket in the urn of the deity. Others more fortunate, issuing from the sources of some stream, are caught by the current of the greater rivers, and conveyed away to embellish their distant banks with a verdure not their own.

There are some which cross the vast Ocean ; and after a long navigation are driven by the very tempests on the regions which they adorn and enrich. Such are the double cocoas of the Sechelles or Mahé Islands, which the Sea carries regularly every year a distance of four hundred leagues, and lands them on the coast of Malabar. The Indians who inhabit it were long under the persuasion, that those annual presents of the Ocean must have been the produce of palm-trees that grow under it's billows. They gave them the name of marine cocoa-nuts ; and ascribed wonderful virtues to them. They set as high a value upon them as upon ambergris ; and to such a pitch was this extravagance carried, that many of those fruits have been sold as high as a thousand crowns a-piece. But the French having some years ago discovered the Island of Mahé, which produces them, and which is situated in the fiftieth degree of South-Latitude, imported them in such quantities to India, that they

sunk at once in value and in reputation; for men in every country prize those things only which are rare and mysterious.

In every island where the eye of the traveller has been able to contemplate the primordial dispositions of Nature, he has found their shores covered with vegetables, all the fruits of which possess nautical characters. *James Cartier* and *Champlain* represent the strands of the lakes of North-America as shaded by stately walnut-trees. *Homer*, who has so attentively studied Nature, at times when, and in places where, she still retained her virgin beauty, has planted the wild-olive along the shores of the island on which *Ulysses* floating upon a raft, is thrown by the tempest. The navigators who have made the first discoveries in the seas of the East-Indies, frequently found in them shallows planted with cocoa-trees. The Sea throws such quantities of fennel-seed on the shores of *Maadeira*, that one of it's bays has obtained the name of *Funchal*, or *Fennel-Bay*.

It was by the course of those nautical seeds, too carelessly observed by modern Seamen, that the Savages formerly discovered the islands to windward of the countries which they inhabited. They formed conjectures respecting a tree at a great distance, on seeing it's fruit cast upon their shores. By similar indications *Christopher Columbus* acquired the assurance that another world existed. But the regular winds and currents from the East, in the South-Sea, had carried them long before to the Nations of Asia; of which I shall say something toward the end of this Study.

There are besides vegetables of an amphibious nature. They are disposed in such a manner, that one part of their foliage raises itself toward Heaven, and the other forms an arcade and bends downward to the ground. Nature has given to their seeds likewise the power of at once flying and swimming. Such is the willow, the seed of which is enveloped in a cobweb down, which the winds transport to a great distance, and which floats along the surface of the water without wetting itself, like the downy feathers of the duck. This down is composed of small capsules like the bottom of a lamp, and with two beaks filled with seeds, which are covered with a plume: so that the wind conveys those capsules through the air, and likewise transports them by sailing along the face of the water. This configuration was admirably adapted to be the vehicles of the seeds of

plants which grow by the side of stagnant waters and lakes. The same thing holds as to the seeds of the poplar ; but those of the alder which grows on the banks of rivers have no plumage, because the current of the stream is designed to convey them from place to place.

The seeds of the fir and of the birch have at once volatile and nautical characters ; for the fir has it's kernel attached to a membranous wing ; and the birch has it's grain embraced by two wings, which give it the appearance of a little shell. These trees grow at once on the wintry mountains and on the margin of the lakes of the North ; their seeds had occasion not only to sail over stagnant waters, but to be transported through the air over the snows, in the midst of which they take delight. I have no doubt that there may be species of these trees the seeds of which are altogether nautical. Those of the linden-tree are carried in a spherical body similar to a little bullet. This bullet is affixed to a long tail, from the extremity of which descends obliquely a follicle of considerable length, whereby the wind carries it away to a great distance, spinning it round and round. When it drops into the water it plunges about the length of an inch, and serves in some sort as ballast to it's tail, and to the little leaf attached to it, which being thus brought to a vertical situation, perform the functions of a mast and a sail. But the examination of so many curious varieties would carry me too far.

This would be the proper place to speak of the roots of vegetables ; but I am little acquainted with what passes under ground. Besides in all Latitudes, on heights as well as by the water's side, we find the same substances nearly, muds, sands, pure mould, rock, which must produce, a much greater resemblance in the roots of plants than in the other parts of their vegetation. I have no doubt however that Nature has established on this subject relations, the knowledge of which would be highly useful, and that a cultivator somewhat experienced might be able, by inspecting the root of a vegetable, to determine the species of soil best adapted to it. Those which are very hairy seem most proper for sandy grounds. The cocoa tree, which grows to a very large size on the shores of the Torrid Zone, thrives in pure sand, which it interlaces with such a prodigious quantity of hairy fibres, as to form a solid mass around it. It is on this basis that it effectually resists the most violent tempests

in the midst of a moving soil. What is singularly remarkable in the case of this plant, it never succeeds so well as in the sand on the sea-shore, and generally languishes in the interior of a country.

The Maldivia Islands, which are for the most part nothing but sandy shallows, are the most renowned regions of all Asia for the abundance and the beauty of their cocoa trees. There are other vegetables of the shores the roots of which are drawn out like cords. This configuration renders them exceedingly proper for binding together the ground, and thereby defending it against the inroads of the watery element. Such are among ourselves the alder, the reed, but above all a species of dog-grass, which I have seen very carefully cultivated in Holland along the dikes.

Bulbous plants appear in like manner to take pleasure in soft muds, into which they cannot penetrate very far from the roundness of their bulbs. But the elm extends it's roots at pleasure on the declivity of the mountain; and the oak inserts his sturdy pivots into it, to lay hold of the successive strata of which it is composed. Other plants preserve on the high grounds, by their creeping foliage and their superficial roots, the emanations of dust which the winds there deposit. Such is the *anemone nemerosa*. If you find a single root of it on a hill, in a wood not greatly frequented, you may rest assured that it diffuses itself like a net-work through the whole extent of that wood.

There are trees, the trunks and the roots of which are admirably constructed with obstacles which appear to us accidental, but which provident Nature foresaw. For example, the cypress of Louisiana grows with it's foot in the water, chiefly on the banks of the Méchassippi, whose vast shores it magnificently shades. It rises there to a height which surpasses that of almost any of the trees of Europe.* Nature has given to the trunk of this stately tree a circumference of more than thirty feet, to enable it to resist the ices from the lakes of the North, which discharge themselves into that river, and the prodigious rafts of timber which float down it's stream, and which have obstructed most of it's mouths to such a degree as to interrupt

* See Father Charlevoix, his History of New France, vol. iv.

the navigation to vessels of any considerable burthen. And to put it beyond a doubt that she designed the thickness of it's trunk for withstanding the shock of floating bodies, it is remarkable that at the height of six feet she suddenly diminishes the size of it at least a third, the full magnitude having become superfluous at that degree of elevation: and for the purpose of securing it in another manner still more advantageous, she raises out of the root of the tree at four or five feet distance all around, several large stumps from one foot to four feet high. These are not shoots; for their head is smooth, and bears neither leaves nor branches: they are real ice-breakers.

The tupelo, another great tree of Carolina, which grows likewise by the water's-side, but in creeks, has nearly the same dimensions at it's base, excepting the ice-breakers or pallisades. The seeds of those trees are fluted, as I have already observed to be the case of aquatic seeds in general; and that of the cypress of Louisiana differs considerably, by it's nautical form, from that of the cypress of the mountains of Europe, which is volatile. These observations are so much the more worthy of credit, that Farther *Charlevoix*, who in part relates them, deduces no consequence whatever from the facts, though he was abundantly capable of interpreting their use.

It must now be apparent of what importance it is to connect the study of plants with that of the other works of Nature. It is possible to ascertain by their flowers the exposure to the Sun which is best adapted to them; by their leaves the quantity of water that is necessary to vegetation; by their roots, the soil which is most suitable; and by their fruits, the situations in which they ought to be placed, together with new relations to the animals which feed upon them. By fruit I mean, as Botanists likewise do, seed of every species.

The fruit is the principal character of the plant. Of this we may form a judgment, first from the care which Nature has bestowed on it's formation and preservation. It is the ultimate term of her productions. If you examine in a vegetable the different envelopes which enclose it's leaves, it's flowers, and it's fruits, you will perceive a most wonderful progression of pains and precautions. The simple leaf-buds are easily distinguishable from the simplicity of their cases. Nay there are plants which have none at all, as the fruits of the gramineous, which

start immediately out of the earth, and stand in no need of any foreign protection. But the buds which contain flowers are provided with sheaths, or lined with down, as those of the apple-tree; or cased over with glue externally, as those of the great India chesnut; or are enclosed in bags, as the flowers of the narcissus; or secured in some way or another, so as to be very distinguishable even before the expansion.

You afterwards perceive that the care employed in dressing out the flower was entirely destined to the fecundation of the fruit; and that when this is once formed, Nature redoubles her precautions, both externally and internally, for it's preservation. She gives it a placenta, she envelops it in pellicles, in shells, in pulps, in pods, in capsules, in husks, in skins, and sometimes in a case of thorns. A mother cannot pay more attention to the cradle of her infant. In process of time, in order that her grown child may be enabled to go abroad, and look for a settlement in the world, she crowns it with a tuft of plumage, or incloses it in a shell: furnishes it with wings to fly away through the air, or with a bark to sail off along the face of the water.

There is something still more marked to arrest our observation in favour of the fruit. It is this, that Nature frequently varies the leaves, the flowers, the stems, and the roots of a plant; but the fruit remains constantly the same, if not as to it's form, at least as to it's essential substance. I am persuaded that when she was pleased to create a fruit, it was her intention that it should have the power of re-producing itself on the mountains, in the plains, amidst rocks, in sands, on the brink of waters, and under different Latitudes; and in order to adapt it to it's situation, she varied the watering-pot, the mirror, the prop, the attitude, the buttress, and the fur of the vegetable, correspondingly to the Sun, to the rains, to the winds, and to the soil. To this intention, I believe, we ought to ascribe the prodigious variety of species in every genus, and the degree of beauty which each attains when in the situation that is natural to it. Thus, in forming the chesnut to reach perfection on the stony mountains of the South of Europe, and to supply the want of corn, which scarcely ever succeeds there, she placed it on a tree which in those regions attains magnificence from it's adaptations.

I have eaten of the fruit of the chesnut-tree of the Island of Corsica. It is as large as small hen's eggs, and makes excellent food. You may read in a modern traveller the description of a

chesnut-tree which grew in Sicily, on one of the ridges of Mount *Ætna*. It's foliage is of such extent that a hundred cavaliers could repose with ease under it's shade. For that reason it obtained the name of *centum cavallo*. Father *Kircher* assures us that he had seen on the same mountain, in a place called *Treecastagne*, three chesnut-trees of such a prodigious size, that when they were felled you might have lodged a large flock of sheep under covert of their bark. The shepherds employed them for this purpose in the night time, and in bad weather, instead of penning up their charge in the fold. Nature has granted to this stately vegetable the faculty of collecting on the steep mountains the waters of the Atmosphere, by means of leaves formed like so many tongues; and of penetrating, by means of it's sturdy roots, down to the very bed of fountains in despite of lavas and rocks.

Nature has been pleased elsewhere to produce the fruit of this tree with a degree of bitterness, for the use of some animal no doubt, on the brink of the salt-water creeks and arms of the Sea in Virginia. She has bestowed on the tree which bears it's leaves disposed in form of a tile, a scaly bark, flowers different from those of the European chesnut-tree, but adapted unquestionably to the humid exhalations, and to the aspects of the Sun to which it is exposed. In a word, she has transformed it into the great India chesnut. It arrives at much greater beauty in it's native country than in Europe. That of America is the maritime chesnut-tree; and that of Europe is the chesnut-tree of the mountains. She has placed, perhaps by a different kind of combination, this fruit on the beech-tree of our hills, the mast of which is evidently a species of chesnut.

Finally, by means of one of those maternal attentions which have induced her to suspend, even on herbs, the productions of trees, and to serve up the same dishes on the smallest tables, she has placed before us the same fruit in the grain of the black corn, which in it's colour and it's triangular form resembles the seed of the beech, called in Latin *fagus*, whence this species of corn has obtained the name of *fagopyrum*. One thing at any rate is certain, namely, that independent of the mealy substance, we find in the black-corn, in the beech-mast, and in the chesnut, similar properties, such as that of cooling excessive heat of urine.*

* See *Chomel's Treatise on Common Plants*.

It was in like manner the intention of Nature to produce the acorn in a great variety of exposures. *Pliny* enumerated in his time thirteen different species in Europe, one of them, which makes very excellent food, is that of the green oak. It is of this that the Poets speak when they celebrate the felicity of the Golden Age, because it's fruit then served as an aliment to Man. It is worthy of being remarked that there is not a single genus of vegetable but what gives, in some one of it's species, a substance capable of being converted into nourishment for mankind. The acorn of the green oak is, among the fruits of this genus of trees, the portion reserved for our use. Nature has been pleased, after making this provision for Man, to scatter the other species of the oak over the different soils of America, to supply the necessities of her other creatures. She has preserved the fruit, and has varied the other parts of the vegetable. She has placed the acorn, but with the leaves of the willow, on the plant which has for that reason got the name of the willow-leaved oak, and which thrives in that country by the water's-side.* She has placed it together with small and pendent leaves affixed to pliant tails like those of the aspin, on the water oak, which grows there in the marshes. But when she intended to plant them in dry and parched soils, she united to them leaves of ten inches in breadth, adapted to the reception of rain-water, such are those of the species known by the name of the black oak in that country.

It may be necessary farther to observe, that the place where any species of plant produces the finest fruit, determines it's principal genus. Accordingly, though the oak has it's species scattered about every where, it must be considered as of the genus of mountain-trees; because that which grows on the mountains of America, and there distinguished by the name of the chesnut-leaved oak, yields the largest acorns, and is one of the greatest trees in that part of the world; whereas the water-oak and the willow-leaved oak, rise to no great height, and produce very small acorns.

The fruit, as we have seen, is the invisible character of the plant. To it, accordingly, Nature has likewise attached the

* See the figures of it in *Father Charlevoix*, his *History of New France*, vol. iv.

principal relations of the animal kingdom to the vegetable. It was her intention that an animal of the mountains should find the fruit on which he has been accustomed to live in the plains, on the sand, among the rocks, when he is under the necessity of changing his country, and especially on the brinks of rivers, when he descends thither to quench his thirst. I am not acquainted with a single mountain-plant but what has some of its species, with their corresponding varieties, scattered over all situations, but principally on the margin of waters.

The mountain-pine has its kernels mounted on wings, and the aquatic pine has its seed inclosed on a skiff. The seeds of the thistle which grow on parched soil, are furnished with plumes to convey them from place to place: those of the fullers-thistle, which thrives by the water's-side, have none, because they had no occasion for any to assist them in swimming. Their flowers vary for similar reasons; and though Botanists have two different genera of them, the goldfinch fails not to acknowledge this last as a real thistle. He rests himself upon it when he finds it convenient to go and cool himself on some watery bank. He forgets, on beholding his favourite plant, the sandy downs where he was born, and cheers the banks of the rivulet with the music of his song, and the beauty of his plumage.

It appears to me impossible to acquire any thing like a knowledge of plants unless by studying their geography and their ephemeris. Without this double illumination, which mutually reflects, their forms will be for ever strange to us. The greatest part of Botanists however pay no manner of regard to this. In making their collections, they remark not the season at which plants grow, nor the place where, nor the aspect to which they are exposed. They carefully attend to all their intrinsic parts, and especially to their flowers; and after this mechanical examination, deposit them in their herbary, and imagine they have a thorough knowledge of them, especially if they have had the good fortune to dignify them by imposing some Greek name. They resemble a certain hussar of whom I have heard, who having happened to find a Latin inscription in characters of bronze, on an antique monument, disengaged them one after another, and tumbled them together into a basket, which he dispatched to an Antiquarian of his friends, with a request that he would inform him what they meant. They no more lead us to

an acquaintance with Nature, than a Grammarian would give us a relish for the genius of *Sophocles*, by presenting us with a naked catalogue of his tragedies, of the division of their acts and scenes, and of the number of verses which compose them. With equal absurdity are they chargeable who collect plants, without marking their relations to each other, and to the elements ; they scrupulously preserve the letter, but suppress the sense. Far different was the manner in which a *Tournefort*, a *Vaillant*, a *Linnæus*, prosecuted the study of Botany. If these learned men have not deduced any consequence from those relations, they have at least prepared the projecting stones of expectation, which promise the construction of a future fabric of science.

Though the observations which I have just made respecting the elementary harmonies of plants, are but few in number, I have the confidence to affirm that they are of very high importance to the progress of agriculture. The point in question is not to determine geometrically the genera of flowers, whose mirrors are the best adapted for reflecting the rays of the Sun in every point of Latitude ; the glory of calculating their curves is reserved for future *Newtons*. Nature has outrun our most ardent wishes in those places where she has been left at liberty to re-establish her own plans. We have it in our power to secure prosperity to ours, in a manner the most beneficial, by reducing them into harmony with her's. In order to ascertain what plants are best adapted to succeed in such and such a district, you have only to pay attention to the wild plants which thrive there spontaneously, and which are distinguishable for their vigor and for their multitude : then substitute in their place domestic plants, which have the same kind of flowers and leaves. Wherever umbelliferous plants grow, you may put in their room such of our culinary vegetables as have most analogy with them, from their leaves, their flowers, their roots, and their grains, such as the *daucus* genus: the artichoke will there usefully replace the gaudy thistle ; the domestic plumb-tree ingrafted on a wild stock of the same plant, in the very place where this spontaneously sprung up, will become extremely vigorous. I am persuaded that by these natural approximations, advantage might be derived from the most barren sands and rocks ; for there is

not a single genus of wild plant but what contains a species fit for food.

But it was not sufficient for Nature to have established so many harmonies between plants, and the situations in which they were destined to vegetate, had she not likewise provided means for restoring them, when destroyed by the intolerant culture of Man. Let a piece of ground be left uncultivated for ever so short a space of time, and you will presently see it clothed with vegetables. They grow in that case in such numbers, and so vigorously, that there is no husbandman capable of producing an equal quantity on the same spot, let him take what pains he will. These shoots however, so vigorous and so rapid, which frequently take possession of our dock-yards of free-stone, of our walls of ashlar, and of our courts paved with granite, are in many cases only a provisional culture. Nature who is always advancing from harmony to harmony, till she has attained that point of perfection which she has proposed to herself, sows at first with grasses, and with herbage of different species, all abandoned soils, waiting for an opportunity of exerting her powers, to raise on that very spot vegetables of a higher order. On the rude neglected districts, where barren downs alone meet our eyes, posterity may behold stately forests arising.

We shall throw, as our custom is, a superficial glance on the very ingenious methods which Nature employs for preparing and conducting those vegetable progressions. We shall hence attain a glimpse at least, not only of the elementary relations of plants, but of those which exist between their different classes, and which extend even to the animal kingdom. Vegetables the most contemptible in the eyes of Man are frequently the most necessary in the order of Creation.

The principal means employed by Nature for securing the growth of plants of every other species, are the thorny plants. It is very remarkable that plants of this description are the first which appear on lands in fallow, or in forests which have been cut down. They are in truth wonderfully well adapted to promote foreign vegetations, because their leaves with deep incisions, like those of the thistle and echium, or their sprigs bent into an arch, as those of the bramble, or their horizontal and interlaced branches, like those of the black-thorn, or their boughs bristled with briars and unprovided with leaves, as those

of the sea-rush, leave underneath and around them many intervals through which other vegetables may arise, and find protection from the tooth of most quadrupeds. Nurseries of trees are frequently found in their bosom. Nothing is more common in coppice-woods than to see a young oak start out of a tuft of brambles, which enamels the earth all around with it's clusters of prickly flowers ; or a young pine arise out of a yellow brake of marine-rushes.

When these trees have once acquired a certain degree of growth and size, they stifle by their shade those thorny plants, which subsist no longer except along the skirts of the wood, where they enjoy air sufficient for their vegetation. But in this situation, such plants are still going on to extend the empire of their superiors from year to year over the plains. Thus, the thorny plants are the original cradles of the forests ; and the scourge of the agriculture of Man is the bulwark of that of Nature.

Man has however imitated in this respect the processes of Nature ; for if he wishes to protect the newly sown seeds of his garden, he finds it frequently necessary to cover them with prickly branches of one sort or another. It appears to me probable that there is not a heath but what in time might become a forest, were their commoners restrained from driving the flocks thither to pasture, for the cattle crop the tender shoots of the trees as fast as they spring up. This in my opinion is the reason why the declivities of the lofty mountains of Spain, of Persia, and of many other parts of the World, are not clothed with trees : it is because of the numerous flocks of sheep which are driven thither in Summer, and which roam over their different chains. I am fully convinced that those mountains were covered in the earlier ages of the World with forests which were laid low by their first inhabitants : and that they would resume their ancient clothing, though now naked and desert, were the cattle to pasture on them no longer. It is very remarkable that those elevated regions are sowed over with prickly plants, just as our heaths generally are.

Don *Garcias de Figueroa* Ambassador from Spain at the Court of *Cha-Abbas* King of Persia, relates, in the account which he has given of his journey, that the lofty mountains of Persia which he crossed, and where the Turcomans are continually

straying as they tend their fleecy charge, were covered with a species of thorny shrub, which grew luxuriantly in the most parched situations. This same shrubbery served as a retreat to a great number of partridges.

From this circumstance we take occasion to observe, that Nature employs the birds particularly to sow the thorny plants in places the steepest and most inaccessible. They are accustomed to retire thither in the night, and there deposit with their dung the stony seeds of the bramble-berry, of the berry of the eglantine, of the barberry, and of most thorny shrubs, which, from relations no less wonderful, are indigestible in their stomach.

Birds have besides particular harmonies with those vegetables as we shall make appear in it's proper place. Not only do they find on them a plentiful supply of food, and shelter under them, but downs for lining their nests, as on thistles, and on the cotton-tree of America; so that if many of them resort for safety to the elevation of towering trees, others find it in the thorny brake. There is not a single bush but what has it's peculiar bird.

Independently of the plants proper to each situation, and which are there domesticated, there are some in a state of incessant peregrination, and flit round the earth without settling in any fixed abode. We can easily have a conception of the cause of this constant removal by supposing, what is actually the truth, that several of such plants shed their seeds only at the season when certain regular winds blow, or at certain revolutions of the currents of the Ocean. Whatever may be in this, I am of opinion that we must rank under this description many plants which were known to the Ancients, but which are not now to be found. Such, among others, is the celebrated *lazerpitium* of the Romans, the juice of which, called *lazer*, sold for it's weight in silver. This plant, according to *Pliny*, grew in the vicinity of the city of Corenum, in Africa; but it had become such a rarity in his time as hardly any where to be seen. He tells us that a single plant of it had been found under the reign of *Nero*, and that it was sent to this Prince as a great curiosity.

Modern Botanists pretend that the *lazerpitium* is the same plant with the *silphium* of our gardens. But they are evidently

in an error, from the descriptions which the Ancients, and among others *Pliny* and *Dioscorides*, have left us of it. For my own part, I have no doubt that the lazerpitium is of the number of the vegetables which are destined to flit along the Earth, from East to West, and from West to East. It is perhaps at present on the western shores of Africa, whither the easterly winds may have conveyed it's seeds ; perhaps likewise, by the revolutions of the westerly winds, it may have returned to the place where it was in the days of *Augustus* ; or it may have been conveyed into the plains of Ethiopia, among Nations totally unacquainted with its pretended wonderful qualities.

Pliny enumerates a great many other vegetables, which are at this day to us equally unknown. It may merit observation, that those vegetable apparitions have been contemporary with several species of flitting birds, which have likewise disappeared. It is well known that there are several classes of birds, and of fishes, which do nothing but migrate incessantly over the Earth and through the Seas ; some in a certain revolution of days ; others at the end of a certain period of years. Many plants may be subjected to a similar destiny. This law extends even to the Heavens, in which some new star is from time to time making it's appearance. Nature, as I think, has disposed her Works in such a manner as to have always some novelty in reserve, in order to keep man continually in exercise. She has established, in the duration of the existence of the different beings of each kingdom, concerts of a moment, of an hour, of a day, of a moon, of a year, of the life of a man, of the duration of a cedar, and perhaps of that of a globe : but this undoubtedly is known to the SUPREME BEING alone.

I am persuaded at the same time, that the greatest part of flitting plants must have a principal centre, such as a steep rock, or an island in the midst of the Sea, from whence they diffuse themselves over all the rest of the world. This leads me to deduce what I consider as an irrefragable argument in support of the recent Creation of our Globe ; it is this, were the Globe of very remote antiquity, all the possible combinations of the propagation of plants by seed would have been already completed all over the World. Thus, for example, there would not be an uninhabited island and shore of the Seas of India which you would not find planted with cocoa-trees, and sown with co-

cocoa-nuts, which the Ocean wafts thither every year, and which it scatters alternately on their strands, by means of the variety of it's monsoons and of it's currents. Now it is unquestionably certain, that the radiations of that tree and it's fruit, the principal focuses of which are in the Maldivia Islands, are not hitherto diffused over all the islands of the Indian Ocean.

The Philosopher *Francis Leguat*, and his unfortunate companions, who were, in the year 1690, the first inhabitants of the small Island of Rodriguez, which lies a hundred leagues to the eastward of the Isle of France, found no cocoa-trees in it. But precisely at the period of their short residence there, the Sea threw upon the coast several cocoa-nuts in a state of germination; as if it had been the intention of Providence to induce them, by this useful and seasonable present, to remain on that island and to cultivate it.

Francis Leguat, who was unacquainted with the relation which seeds have to the element in which they are designed to grow, was very much astonished to find that those fruits, which weighed from five to six pounds, must have performed a voyage of sixty or fourscore leagues without being corrupted. He took it for granted, and he was in the right, that they came from the Island of St. Brande, which is situated to the North-east of Rodriguez. These two desert islands had not as yet, from the Creation of the World, communicated to each other all their vegetables, though situated in a current of the Ocean which sets in alternately, in the course of one year, for six months toward the one, and six months toward the other.

However this may be, they planted those cocoa-nuts, which in the space of a year and a half sent out shoots of four feet in height. A blessing from Heaven so distinctly marked, had not the power of detaining them in that happy island. An inconsiderate desire of procuring themselves women constrained them to abandon it, notwithstanding the remonstrances of *Leguat*, and plunged them into a long series of calamities which few of them were able to survive. For my own part, I can entertain no doubt that had they reposed the confidence in Providence which they had reason to do, it's care would have conveyed wives for them into that desert Island, as it had sent to them the gift of the cocoa-nut.

To return to the subject of vegetable navigation ; all the combinations and the versatilities of their sowings, would have been long ago completed in islands lying between the same parallels, and in the same monsoons, if the World had been eternal. The double cocoa-nuts, the nurseries of which are in the Sechelles Islands, would have diffused themselves, and would have had time to germinate on the Malabar coast, on which the Sea is from time to time throwing them. The Indians would have planted upon their shores those fruits to which they ascribed virtues so miraculous, while the palm-tree which bears them was so entirely unknown but twelve years ago to the people of this coast, that they believed them to be natives of the bottom of the Sea, and thence gave them the appellation of marine cocoa-nuts. There are in like manner a multitude of other fruits between the Tropics, of which the primordial stocks are in the Moluccas, in the Philippines, in the islands of the South-Sea, and which are entirely unknown on the coasts of both Continents, and even in the adjacent islands, which undoubtedly would have become there the objects of cultivation to their inhabitants, had the Sea been allowed sufficient time to multiply the projection of them on their shores.

I shall pursue this reflection no farther ; but it evidently demonstrates the newness of the World. Were it eternal, and exempted from the care of a Providence, it's vegetables would long since have undergone all the possible combinations of the chance which re-sows them. We should find their different species in every situation where it was possible for them to grow. From this observation I deduce another consequence, namely this, That the AUTHOR of Nature evidently intended to link Mankind together by a reciprocal communication of benefits, the chain of which is as yet very far from being completed. Where is, for example, the benefactor of Humanity, who shall transport to the Ostiaks and the Samoièdes, of Waigat's Strait, Winter's tree from the Straits of Magellan, the bark of which unites the savour of cloves, of pepper, and of cinnamon ? And who is the man that shall convey to Magellan's Strait the pease-tree of Siberia, to feed the starving Patagonian ?

What a rich collection might Russia make, not only of the trees which thrive in the northern and the southern regions of America, but of those which, in all parts of the World, crown

the lofty ice-covered mountains, whose elevated ridges have a temperature approaching to that of her plains ? Wherefore behold she not her forests enriched with the pines of Virginia, and with the cedars of Mount Lebanon ? The desert shores of the Irtis might every year clothe themselves with the same species of oats wherewith so many Nations, inhabiting the banks of the rivers of Canada, are principally supported. Not only might she collect in her plains the trees and the plants of cold Latitudes, but a great number of annual vegetables which grow during the course of a Summer in warm and temperate Latitudes. I know by experience that the Summer's heat is as powerful at Petersburg as under the Line.

There are besides parts of the ground in the North, which have configurations perfectly adapted to afford a shelter against the northerly winds, and to multiply the warmth of the Sun. If the South has it's icy mountains, the North has it's reverberatory valleys. I have seen one of those small valleys near Petersburg, at the bottom of which flows a brook that never freezes even in the midst of Winter. The rocks of granite wherewith Finland is roughened all over, and which according to the report of Travellers cover most of the lands of Sweden, of the shores of the Frozen Ocean, and all Spitzbergen, are sufficient for producing the same temperatures in many places, and for diminishing in them to a considerable degree the severity of the cold.

I have seen in Finland, near Wiburg, beyond the sixty-first degree of Latitude, cherry-trees entirely exposed to the weather, though these trees are natives of the forty-second degree ; that is of the kingdom of Pontus, from whence *Lucullus* transplanted them to Rome after the defeat of *Mithridates*. The peasantry of that Province cultivate tobacco with success, which is a much more southerly plant, being originally a native of Brasil. It is I admit an annual plant, and that it does not acquire in it's northern situation a very high degree of perfume ; for they are under the necessity of exposing it to the heat of their stoves, in order to bring it to a state of perfect maturity. But the rocks with which Finland is covered over would undoubtedly present, to attentive eyes, reverberating situations which might bring it to a sufficient degree of maturity, without the aid of artificial heat.

I myself found, not far from the city of Fredericksham, upon a dunghill under the shelter of a rock, a very lofty tuft of oats the produce of a single seed, consisting of thirty-seven stalks, loaded with as many ears completely ripe, without reckoning a multitude of other small suckers. I gathered it with an intention of having it presented to her imperial Majesty, *Catharine II.* by my general *M. Dubosquet*, under whose orders, and in whose company I was then visiting the fortified places of that province: it was likewise his intention; but our Russian attendants, careless as all slaves are, suffered it to be lost. He was exceedingly vexed at this as well as I. It is impossible to help thinking, that a sheaf of corn so rich and beautiful, the produce of a province considered even at Petersburg as smitten with sterility, because of the rocks which cover it's surface, and which procured for it from ancient Geographers the epithet of *lapidosa* (stony), would have been as acceptable to her Majesty, as the huge block of granite which she has since had conveyed from thence, to be formed at Petersburg into the basis of a statue of *Peter the Great*.

I have seen in Poland several private individuals cultivate the vine and the apricot-tree with very great success. *M. de la Roche*, Consul from the Prince of Moldavia, carried me when at Warsaw to a little garden in the suburbs of that city, which produced to the occupier an annual revenue of one hundred pistoles, though it did not contain quite thirty of the last mentioned tree. It was totally unknown in that country a hundred and fifty years ago. The apricot was first introduced into it by a Frenchman, valet-de-chambre to a Queen of Poland. This man raised the fruit secretly, and made presents of it to the *Grandeess* of the Country, pretending that he had received it from France by the couriers of the Court. The great did not fail to pay him magnificently for his presents; and this species of commerce became to him the foundation of an ample fortune, by means of which his great-grand-children are at this day the most opulent Bankers of the Country.

What I have said respecting the possibility of enriching Russia and Poland with useful vegetables, is not only in the view of acknowledging, the best way in my power, the gracious reception with which I was honoured by persons of rank and by the government of those countries, when I was a stranger among

them; but because these indications tend equally to the improvement of France, the Climate of which is more temperate. We have icy mountains capable of producing all the vegetables of the North; and reverberating valleys equally adapted to the production of most of those of the South. It would not be proper, as our custom is, to make an effort to render this species of culture general through a whole district, but to set it a-going in some little sheltered exposure, or in some small winding valley. The influence of these positions is of no great extent. Thus the famous Constantia vine of the Cape of Good-Hope succeeds perfectly only on a small spot of ground, situated at the bottom of a little hill, whereas the adjoining and surrounding vineyards do not produce the muscadine grape of any thing like the same quality. Of this too I have had personal experience.

In France it would be proper to look for sheltered aspects, such as we have been describing, in places where there are white stones in abundance, the colour of which is the best adapted to reverberate the rays of the Sun. Nay I believe that marl is indebted to it's white colour for part of the heat which it communicates to the lands on which it is spread; for it reflects upon them the rays of the Sun with so much activity, as to burn up the first shoots of many herbs. This is the reason, if I am not mistaken, why marl, which has in other respects the principles of fecundation within itself, kills a great many of the smaller herbs which are accustomed to grow under the shade of the corn, and whose first leaves are more tender than those of corn, which is in general the most hardy of gramineous plants.

It would be farther necessary to look for those fortunate exposures in the vicinity of the Sea, and under the influence of it's winds, which are so necessary to the vegetation of many plants that several of them refuse to grow in the inland parts of a country. Such is among others the olive-tree, which it has been found impossible to propagate in the interior of Asia and of America, though the Latitude be in other respects favourable. Nay I have remarked that it is not fruitful in islands and on shores where it is excluded from the sea-breezes. To this cause I ascribe the sterility of those which have been planted in the Isle of France, on it's western shore; for it is sheltered

from the East-winds by a chain of mountains. As to the cocoa-tree, it will not thrive between the Tropics, unless it has, if I may venture to say so, it's root in the sea-water. It is I firmly believe for want of these geographical considerations, and some others of a similar nature, that many plans of improvement in cultivation have failed in France, and in her Colonies.

However that may be, it might be possible to find within the kingdom an icy mountain, with perhaps a reverberating valley below. It would be a most agreeable employment to go in search of such a situation, and the greatest benefits might be derived from it. We might convert it into a Royal Garden, which would present to our Sovereign a spectacle of the vegetation of a multitude of climates, upon one line of less than fifteen hundred fathoms of elevation. There he might bid defiance to the burning heat of the dog-star, under the shade of cedars, on the mossy bank of a rivulet issuing from the snow ; and perhaps escape the severity of Winter's cold, at the bottom of a valley with a southern aspect, under the palm-tree, and amidst a field of sugar-canes. We might there naturalize the animals which are the compatriots of those vegetables. He might hear the braying of the rein-deer of Lapland, from the same valley in which he would see the peacocks of Java building their nests. This landscape would collect around him a part of the tributes of the Creation, and exhibit to him an image of the terrestrial paradise, which was situated as I suppose in a similar position. In serious truth, I cannot help expressing a wish, that our Kings would extend their sublime enjoyments, as far as the study of Nature has pursued it's researches under their flourishing Empire.*

It now remains that I examine the harmonies which plants form with each other. These harmonies constitute the inexpressible charm lavished on the sites which Nature has sowed

* *Nescià mens hominum fati fortisque futura !* Ah, blind to futurity ! Little did good *Saint-Pierre* think that the ill-fated Prince, for whom he took so much delight to plant and decorate this earthly Paradise, was in the course of a few fleeting years to be dethroned, imprisoned, condemned, and publicly executed, in the Metropolis of his own Kingdom ; and the very name of King proscribed by a Nation once enthusiastically attached to Royalty. How wonderful are the Works of Nature ! How mysterious the ways of Providence !

and planted with her own hand ; and they are to be the subject of the ensuing section.

VEGETABLE HARMONIES OF PLANTS.

We are going to apply to plants the general principles laid down in the preceding Study, by examining one after another the harmonies of their colours, and of their forms.

The verdure of plants, which is so graceful to the eye, is a harmony of two colours opposite in their elementary generation ; of yellow which is the colour of the Earth, and of blue which is the colour of the Heavens. Had Nature dyed plants yellow, they would have been confounded with the ground ; if blue, they would have been confounded with the Heavens and the Waters. In the first case, all would have appeared Earth ; in the second, all would have appeared sea : but their verdure gives them contrasts the most delightful with the grounds of this magnificent picture, and consonances equally agreeable with the yellow colour of the Earth, and with the azure of the Heavens.

The green colour possesses this farther advantage, that it accords in a most wonderful manner with all the others, which arises from it's being the harmony of the two extreme colours. Painters who are endowed with taste, hang the walls of their exhibition-rooms with green, in order that the pictures, of whatever colours, may detach themselves from that ground without harshness, and harmonize upon it without confusion.*

Nature, not satisfied with this first general tint, has employed, in extending it over the ground of her scene, what Painters call *transitions*. She has appropriated a particular shade of bluish green, which we call sea-green, to plants which grow in the vicinity of water, and of the Heavens. This is the shade which in general tinges the plants of the shores, as reeds, willows, poplars ; and those of high grounds, as the thistle, the cypress, and the pine ; and which makes the azure of the rivers

* Undoubtedly when they put on a green ground pictures of plants or landscapes, such pictures detach themselves from it but indifferently. There is, in my opinion, a tint better adapted to be the ground of a picture-gallery : namely, gray. This tint, formed of black and white, which are the extremes of the chain of colours, harmonizes with every other without exception. Nature frequently employs it in the Heavens, and on the Horizon, by means of vapours and of clouds, which are generally of that colour.

to harmonize with the verdure of the meadows, and the azure of the Heavens with the verdure of the heights. Thus, by means of this light and fugitive tint, Nature diffuses delicious harmonies over the limits of the waters, and along the profiles of landscapes; and it is productive of a still farther magic to the eye, in that it gives greater apparent depth to the valleys, and more elevation to the mountains.

Something more wonderful still challenges our attention, namely this, that though she employs but one single colour in arraying so many plants, she extracts out of it a quantity of tints so endlessly varied, that each of those plants has it's own, peculiar to itself, and which detaches it sufficiently from it's neighbour to be distinguishable from it; and each of these tints is farther varying from day to day, from the commencement of Spring, when most of them exhibit themselves in a blooming verdure, up to the last days of Autumn, when they are transformed into various yellows.

Nature, after having thus harmonized the ground of her picture by means of a general colour, has detached from it every vegetable in particular by means of contrasts. Such as are designed to grow immediately on the ground, on strands, or on dusky rocks, are entirely green, both leaves and stems, as the greatest part of reeds, of grasses, of mosses, of tapers, and of aloes; but those which are destined to arise out of the midst of herbage, have stems of different tints of brown; such are the trunks of most trees, and the stalks of shrubs. The alder, for example, which thrives amidst the grassy turf, has a stem of an ash-coloured gray; but the wallwort, which entirely resembles it in all other respects, and which grows immediately on the ground, is green all over. The mugwort, which grows along hedges, has reddish stems, by which it is easily distinguishable from the neighbouring shrubs. Nay there are in every genus of plants, certain species which, by their shining colours, seem to have been formed for terminating the limits of their classes. Such is, in the sorb genus, a species called the Canadian service tree, the branches of which are of a coral red. There are in the willow tribe, osiers whose scions are as yellow as gold; but there is not a single plant which does not detach itself entirely from the ground which surrounds it by it's flowers and by it's fruits.

It is impossible to suppose that so many varieties should be mechanical results of the colour next to which bodies are placed ; for example, that the bluish green of most mountain vegetables should be an effect of the azure of the Heavens. It is worthy of being remarked, that the blue colour is not to be found, at least as far as I know, in the flowers or in the fruits of lofty trees ; for in this case they would be confounded with the Heavens ; but it is very common on the ground in the flowers of herbs, such as the blue-bottle, the scabious, the violet, the liverwort, the iris, and many others. On the contrary, the colour of the earth is very common in the fruits of lofty trees, such as the chesnut, the walnut, the cocoa-nut, and the cone of the pine. Hence we have an intimation that the point of view of this magnificent picture was taken from the eye of Man.

Nature, after having distinguished the harmonic colour of each vegetable by the contrasting colour of it's flowers and of it's fruits, has followed the same laws in the forms which she has given them. The most beautiful of forms, as we have seen, is the spherical ; and the most agreeable contrast which it is capable of presenting, is when found in opposition to the radiating form. You will frequently find this form and it's contrast in the aggregation of the flowers that go by the name of the radiated, as the daisy, which has a circle of small white divergent petals surrounding it's yellow disk : we find it likewise, with other combinations, in the blue-bottle, in the asters, and in a multitude of other species. When the radiating parts of the flower are outermost, the spherical are inmost, as in the species which I have just named ; but when the first are inmost, the spherical parts are outermost ; this may be remarked in those whose stamina are drawn out into length, and the petals in spherical portions, such as the flowers of the hawthorn and of the apple tree, and most part of the rosaceous and liliaceous plants. Sometimes the contrast of the flower is with the surrounding parts of the plant. The rose is one of those in which it is most strongly marked : it's disk is formed of beautiful spherical portions, it's calix is bristled with beards, and it's stalk beset with thorns.

When the spherical form is found placed in a flower between the radiating and the parabolic, then there is a complete elementary generation, the effect of which is always highly agreeable ;

it is this too which is produced by most of the flowers that have just been named, by the profile of their calices, which terminate their projecting stems. The nosegay girls are so sensible of the value of this combination, that they sell a simple rose on it's branch at a much higher price than they would ask for a large posy of the same flowers, especially if there are on it a few buds, which present the charming progressions of the florification. But Nature is so vast, and my incapacity so great, that I must restrict myself to throwing a simple glance on the contrast which arises from the simple opposition of forms: it is so universal that Nature has given it to plants which had it not themselves, by opposing them to others which have a configuration entirely different.

The species opposite in forms are almost always in company. When you fall in with an old willow on the bank of a river which art has not degraded, you may frequently see upon it a great convolvulus covering the radiated foliage of the tree with it's own heart-formed leaves, and it's bell-shaped white flowers, to make up the defect of apparent flowers, which Nature has denied to this tree. Different species of ropeweed produce the same harmonies on various species of tall gramineous plants.

These plants, called creeping, are scattered over the whole vegetable kingdom, and are appropriated as I suppose to each vertical species. They have a great variety of methods of fixing themselves on the upright plant, which would alone merit a particular treatise. There are some which turn themselves spirally around the trunks of forest trees, such as the honey-suckle; others, as pease, have hands with three to five fingers, by which they lay hold of shrubbery: it is very remarkable that those hands do not make their appearance till they have acquired a height at which they begin to have occasion for them as a support; others, as the bastard-pomegranate, attach themselves in form of a cork-screw; others form a simple hook with the tail of their leaf, as the nasturtium: the pink employs a similar method of adhesion. These two beautiful flowers are supported in our garden with rods; but it would be a problem well worthy of the investigation of Florists, to ascertain what are the auxiliary plants, if I may call them so, to which these were designed to unite themselves, in the places where they are native; delightful groups might be formed by their re-union.

I am persuaded that there is not a vegetable but what has it's opposite in some part of the Earth : their mutual harmony is the cause of the secret pleasure which we feel in wild rural scenes, where Nature is at liberty to combine them. The fir-tree rises in the forest of the North like a lofty pyramid, of a dark green, and with a motionless attitude. The birch is almost always found in it's vicinity, and grows to nearly the same height, is of the form of an inverted pyramid, of a lively verdure, with a moveable foliage, continually playing about with every breath of the wind. The round-leaved trefoil loves to grow in the midst of the fine grass, and to adorn it with it's own flowery nosegay. Nay I believe that Nature has made those deep incisions in the leaves of a great many vegetables, entirely in the view of facilitating alliances of this sort, and of opening a passage for the grasses, the verdure and delicacy of whose stems form with them an infinity of contrasts. Of this instances innumerable may be seen in uncultivated fields, where tufts of grass pierce through the broad plants of the thistle and the echium. This arrangement has likewise been made, in order that the grasses, which are the most useful of all vegetables, might receive a portion of the rain from Heaven, through the interstices of the broad foliage of those privileged children of Nature, which would stifle every thing around them, were it not for those profound incisions. Nature does nothing merely for the pleasure of doing it, but always connects with it some reason of utility : this appears to me so much the more decidedly marked, that the incisions in leaves are much more common and deeper in the plants and under-shrubbery which rise to no great height, than in trees.

The harmonies resulting from contrast are to be found even in the waters. The reed, on the brink of rivers, raises into the air it's radiating leaves and it's embrowned distaff, whereas the nymphæa extends at it's feet a broad heart-formed foliage, and roses of yellow gold : the one presents on the waters a continued pallisade, and the other a platform of verdure.

Similar oppositions present themselves in the most frightful of climates. *Martens* of Hamburg, who has given a very good account of Spitzbergen, tells us, that when the seamen belonging to the vessel in which he navigated along it's coasts, heaved up the anchor, they seldom failed to bring up with it a very

broad leaf of the *alga marina*, six feet in length, and attached to a tail as long: this leaf was smooth, of a brown colour spotted with black, striped with two white stripes, and made in form of a tongue: he calls it the plant of the rock. But what is very singular, it was usually accompanied by a hairy plant, about six feet in length, like a horse's tail, and formed of hairs so fine, that one might denominate it, says he, the silk of the rock. He found on those dismal shores, where the empire of *Flora* is in such a state of desolation, the *cochlearia* (scurvy-grass) and the sorrel, which grew together. The leaf of the first is rounded in form of a spoon, that of the other is lengthened into the shape of the iron head of an arrow. A Physician of considerable ability, of the name of *Bartholin*,* has observed, that the virtues of their salts are as opposite as their configurations; those of the first are alkalis, those of the other are acids; and from their union results what medical men call a neutral salt, which they ought rather to call a harmonic salt, the most powerful remedy which can be employed as an antiscorbutic, and the scurvy is a disease which is readily and usually caught in those dreadful climates. †

For my own part, I apprehend that the qualities of plants are harmonic as their forms; and that as often as we find them grouped agreeably and constantly, there must result from the union of their qualities, for nourishment, for health, or for pleasure, a harmony as agreeable as that which arises from the contrast of their figures. This is a presumption that I could support, by referring to the instinct of animals, which in browsing on the herbage vary the choice of their aliments; but this consideration would lead me away from my subject.

I should never come to a conclusion, were I to go into a detail respecting the harmonies of so many plants which we under-

* See *Chomel's History of Common Plants*.

† All this is too fanciful. If the scurvy-grass and sorrel are found in climates where the scurvy is frequent; and if it be true, that a neutral (harmonic) salt results from the union of the alkaline and acid, it has not yet been proved, that any of the neutral salts are among the most powerful anti-scorbutic remedies. Without indulging in such reveries or speculations, we should content ourselves with acknowledging the goodness of Providence who has so liberally diffused these two plants through almost all climates of the earth.—B. S. B.

value, because they are feeble or common. If we suppose them, for thought's sake, of the size of our trees, the majesty of the palm would disappear before the magnificence of their attitudes and of their proportions. Some of them, such as the echium, rise like superb chandeliers, forming a vacuum round their centre, and rearing toward Heaven their prickly arms, loaded their whole length through with lamps of violet-coloured flowers. The verbascum, on the contrary, extends around it broad leaves of solemn drapery, and sends up from it's centre a long distaff of yellow flowers, as salutary to the stomach as grateful to the touch. The violet of deep blue contrasts in the Spring with the primrose, expanding it's golden cup with a scarlet brim. On the embrowned angles of the rock, under the shade of ancient beech-trees, the mushroom, white and round as an ivory piece for the chess-board, arises out of a bed of moss of the most beautiful green.

Mushrooms alone present a multitude of unknown consonances and contrasts. This class is, first, the most varied of all those of the vegetables of our climates. *Sebastian le Vaillant* enumerates one hundred and four species of them in the vicinity of Paris, without taking into the account the fungoids, which furnish at least a dozen more. Nature has dispersed them over most shady places, where they frequently form contrasts the most extraordinary. There are some which thrive only on the naked rock, where they present a forest of small filaments, each of which supports it's particular chapter. There are some which grow on substances the most abject, with forms the most solemn; such is that which thrives on what falls from the horse, and which resembles a Roman hat, whence it has borrowed it's name. Others present agreeable consonances: such is that which grows at the foot of the alder, under the form of a cockle. What nymph has planted a shell by the root of a tree of the rivers?

This numerous tribe appears to have it's destiny attached to that of the tree, which have each a mushroom appropriated to itself, and rarely to be found elsewhere; such are those which grow only on the roots of plumb-trees and pines. To no purpose does Heaven pour down it's copious rains: the mushroom under covert of it's umbrella, receives not a single drop. They derive the whole support of life from the Earth, and from the potent

vegetable to whose fortune they have united their own: like those little Savoyards who are planted as posts at the gates of the hotels of the Great, they extract their subsistence out of the superfluity of another; they grow under the shade of the Powers of the forest, and live on the superabundance of their sumptuous banquets.

Other vegetables present oppositions of strength to weakness in a different way, and consonances of protection still more distinguished. Those which we have been mentioning, like lordly Chieftains leave their humble friends at their feet: the others carry them in their arms, and place them upon their heads. They frequently receive the recompense of their noble hospitality. The liannes which in the Antilles-Islands attach themselves to the trees of the forest, defend them from the fury of the hurricane. The Gallic Oak has oftener than once seen itself an object of veneration to the Nations, from having carried the mistletoe in it's branches. The ivy, a friend to monuments and tombs; the ivy, with which in ancient times they crowned the Poets who conferred immortality, sometimes covers with it's foliage the trunks of the stateliest trees. It is one among many of the irresistible proofs of the vegetable compensations of Nature; for I do not recollect that I ever saw the ivy on the trunks of pines, of firs, or of other trees whose foliage lasts all the year round. It invests those only which are stripped by the hand of Winter. Symbol of a generous friendship, it attaches itself only to the wretched; and when death itself has smitten it's protector, it restores to him again the honours of the forest where he lives no longer; it makes him revive by decorating his shade with garlands of flowers, and festoons of undecaying verdure.

The greatest part of plants which grow under the shade are adorned with the most vivid colours; thus the mosses display the brilliancy of their emerald green on the dusky sides of the rocks. In the forests, the mushroom and the agaricum distinguish themselves by their colours from the roots of the trees under which they grow. The ivy detaches itself from their gray barks by it's shining green; the mistletoe discloses it's branches of a yellowish green, and it's fruits similar to pearls, amidst the thick foliage of the oak. The aquatic convolvulus dazzles you with it's large white bell-shaped flowers on the trunk of the willow. The virgin's bower clothes with verdure the ancient

towers, and in Autumn her foliage of gold and purple seems to fix on their sober eminences the rich colours of the setting Sun. Other plants, entirely concealed from the eye, discover themselves by their perfumes. It is thus that the obscure violet invites the hand of lovers to the bosom of the prickly shrub. And thus is verified on every hand, that great Law of contrasts which governs the World: No aggregation is in plants the effect of chance.

Nature has established in the numerous tribes of the vegetable kingdom a multitude of alliances, the end of which is unknown to us. There are plants, for example, the sexes of which are on different individuals, as in the animal Creation. There are others whom you always find united in several clusters, as if they loved to live in Society; others, on the contrary, you almost always meet with in a state of solitude. I presume that many of these relations are connected with the character of the birds which live on their fruits, and which re-sow them. The herbage in the meadows frequently represents the bearing of the trees in the forests; there are some which in their foliage and proportions resemble the pine, the fir, and the oak: nay I believe that every tree has a consonance in its corresponding herb. It is by a magic of this sort that small spots of ground present to us the extent of a large district. If you are under a grove of oaks and perceive on an adjoining hillock tufts of germander, the foliage of which resembles them in miniature, you feel all the effect of a perspective. These diminutions of proportion extend from trees even down to mosses, and are the causes in part of the pleasure which we enjoy in wild rural scenes, where Nature has had leisure to dispose and accomplish her plans. The effect of those vegetable illusions is so undoubtedly certain, that if you have the ground cleared, the extent of any particular spot, when stripped of its natural vegetables, appears much smaller than before.

Nature farther employs diminishing shades of verdure, which being lighter on the summit of trees than at their base, gives them the appearance of being more lofty than they really are. She appropriates, besides, the pyramidal form to many mountain-trees, in order to increase the apparent elevation of their site; this is observable in the larch, the fir, the cypress, and in many other plants which grow on heights. She sometimes unites

in the same place, the effects of seasons and of climates the most opposite. She clothes in hot climates the whole sides of mountains with the vegetable called the ice-plant, because it seems entirely covered over with flakes of ice; you would believe that in the midst of Summer, *Boreas* had breathed upon it all the chilling blasts of the North.

On the other hand we find in Russia, mosses in the midst of Winter; which, from the red and smoky colour of their flowers, have the appearance of being set on fire. In our rainy climates she crowns the summits of hillocks with broom and rosemary; and the tops of ancient towers with the yellow gilly-flower: in the midst of the gloomiest day you would imagine you saw the rays of the Sun shining upon them.

In another place she produces the effect of the wind in the midst of perfect stillness. In many parts of America, a bird has only to alight on a tuft of the sensitive plant, in order to put in motion the whole stripe, which sometimes extends to three furlongs. The European traveller stands still, and observes with astonishment the air tranquil, but the herbage in motion. I myself have sometimes mistaken, in our own woods, the murmur of poplars and of aspens for the bubbling of brooks. Often-er than once seated under their shade on the skirt of a meadow, whose herbage the winds put into an undulatory motion, this multiplied tremulousness has transfused into my blood the imaginary coolness of the stream.

Nature frequently employs the aerial vapours in order to give a greater extent to our landscapes. She diffuses them over the cavities of valleys, and stops them at the windings of rivers, giving you a glimpse, at intervals, of their long canals illumined by the Sun. She thus multiplies their plans, and prolongs their extent. She sometimes withdraws this magic veil from the bottom of the valleys; and rolling it over the adjacent mountains, on which she tinges it with vermillion and azure, she confounds the circumference of the Earth with the vault of Heaven. It is thus that she employs clouds as evanescent as the illusions of human life, to raise us to Heaven. It is thus that she expands over her most profound mysteries, the ineffable sensations of infinity, and that she withdraws from our senses the perception of her Works, in order to convey to our minds a more impressive feeling of them.

ANIMAL HARMONIES OF PLANTS.

Nature, after having established on a soil formed of fragments insensible and lifeless, vegetables endowed with principles of life, of growth, and of generation, accommodated to those beings which had, together with these same faculties, the power of self-motion, dispositions to inhabit them, passions to derive their nourishment from them, and an instinct which impels them to make a proper choice : these are animals. I shall here speak only of the most common relations which they have with plants ; but were I to attempt a detail of those which their innumerable tribes have with the elements, with each other, and with Man, whatever might be my ignorance, I should disclose a multitude of scenes still more worthy of admiration.

In an order entirely new, Nature has not changed her Laws : she has established the same harmonies and the same contrasts, of animals to plants, as of plants to the elements. It would appear natural to our feeble reason, and consonant to the great principles of our Sciences, which ascribe so much power to analogies, and to physical causes, that so many sensible beings which are produced in the midst of verdure, should be in process of time affected by it. The impressions of their parents, added to those of their own infancy, which serve to explain so many appearances in the human species, acquiring in them increasing strength from generation to generation, by new tints, ought at length to exhibit oxen and sheep as green as the grass on which they pasture. We have observed in the preceding Study, that as vegetables were detached from the ground by means of their green colour, the animals which live on verdure distinguish themselves from it in their turn, by means of their dusky colours ; and those which live on the dusky barks of trees, or on other dark grounds, are invested with colours brilliant, and sometimes green.

On this subject I have to remark, that many species of birds of India which live amidst the foliage of trees, as the greatest part of paroquets, many of the colibri, and even of turtles, are of the finest green ; but independently of the white, blue, and red marbled spots, which distinguish their different tribes, and render them perceptible at a distance upon the trees, the brilliant verdure of their plumage detaches them, to great advantage,

from the solemn and imbrowned verdure of those southern forests. We have seen that Nature employs this as the general means of diminishing the reflexes of the heat ; but that she might not confound the objects of her picture, if she has darkened the ground of her scene, she has bestowed greater brilliancy on the dresses of the actors.

It would appear that Nature has appropriated the species of animals coloured in the most agreeable manner, to the species of vegetables whose flowers are the least vivid, as a compensation. There are much fewer brilliant flowers between the Tropics than in the Temperate Zones ; and as a compensation, the insects, the birds, and even the quadrupeds, such as several species of monkeys and lizards, are there arrayed in the most lively colours. When they rest on their proper vegetable, they form with them the most beautiful contrasts, and the most lovely harmonies. I have often stood still in the West-Indies, to contemplate the little lizards, which live on the branches of trees, employ themselves in catching flies. They are of a beautiful apple-green, and have on their back a sort of characters of the most vivid red, resembling the letters of the Arabian alphabet. When a cocoa-tree had several of them dispersed along it's stem, never was there Egyptian Pyramid of porphyry with it's hieroglyphics, so mysterious and so magnificent in my eyes.*

I have likewise seen flocks of small birds, denominated *cardinals*, because they are red all over, settle on shrubbery, the verdure of which was blackened by the Sun, and present the appearance of girandols studded with little burning lamps. Father *du Tertre* says, that there is not, in the Antilles, a spectacle more brilliant, than the alighting of coveys of the parrot species, called *arras*, on the summit of a palm tree. The blue, the red, and the yellow of their plumage, covers the boughs of the flowerless tree with the most superb enamel. Harmonies somewhat similar may be seen in our climates. The goldfinch, with his red head and wings tipped with yellow, appears at a distance on a bush, like the flower of the thistle in which he was

* They have sometimes served me to explain the moral sense of hieroglyphics, engraven on the obelisks of Egypt in honour of her conquering heroes. On beholding the characters traced upon them from right to left, with heads, beaks, and paws, they brought to my recollection the little fly catchers of my palm-tree.

hatched. You would sometimes take the slate-coloured wag-tail, when perched on the extremity of the leaves of a reed, for the flower of the iris.

It would be a very great curiosity to collect a great number of these oppositions, and of those analogies. They would lead us to a discovery of the plant which is peculiarly adapted to each animal. Naturalists have paid to those adaptations no great degree of attention; such of them as have written the History of Birds, class them according to the feet, the bill, the nostrils. They sometimes speak of the seasons of their appearance, but scarcely ever of the trees which they frequent. Those only who, employed in making collections of butterflies, are frequently under the necessity of looking for them in their state of nymph, or caterpillar, have sometimes distinguished those insects by the names of the vegetables on which they found them. Such are the caterpillars of the tithymal, of the pine, of the elm, and so on, which they discovered to be peculiarly appropriated to these vegetables. But there is not an animal existing but what may be referred to it's own particular corresponding plant.

We have divided plants into aerial, aquatic, and terrestrial, as animals themselves are divisible, and we have found in the two extreme classes unvarying harmonies with their elements. They may be farther divided into two classes, into trees and herbs, as animals likewise are into volatile and quadrupeds. Nature does not associate the two kingdoms in consonances, but in contrasts; that is, she does not attach the great animals to the great vegetables; but unites them contrariwise, by associating the class of trees with that of the small animals, and that of herbs with the great quadrupeds: and by means of these oppositions, she bestows adaptations of protection to the feeble, and of accommodation to the powerful.

This Law is so general, that I have remarked in every country, where there is no great variety in the species of grasses, those of the quadrupeds which live upon them are but few in number; and that wherever the species of trees are multiplied, those of volatiles are likewise so. The truth of this may be ascertained by consulting the herbals of many parts of America, and among others those of Guyana and of Brasil, which present but few varieties in the grasses, but a great number in the trees.

It is well known that those countries have in fact few quadrupeds natural to them, and that they are peopled, on the contrary, with an infinite variety of birds and insects.

If we cast a glance on the relations of grasses to quadrupeds, we shall find that, notwithstanding their apparent contrasts, there is actually between them a multitude of real correspondencies. The moderate elevation of the gramineous plants places them within reach of the jaws of quadrupeds, whose head is in a horizontal position, and frequently inclined toward the ground. Their delicate shoots seem formed to be laid hold of by broad and fleshy lips; their tender stems to be easily snapped by the incisive teeth; their mealy seeds easily bruised by the grinders. Besides, their bushy tufts, elastic without being ligneous, present soft litter to ponderous bodies.

If, on the contrary, we examine the correspondencies which exist between trees and birds, we shall find that the branches of trees may be easily clasped by the four-toed feet of most birds, which Nature has disposed in such a manner, that by means of three before and one behind, they may be able to grasp the bough as with a hand. Again, the birds find in the different tiers of the foliage, a shelter against the rain, the Sun, and the cold, toward which the thickness of the trunks farther contribute. The apartures formed in these, and the mosses which grow upon them, furnish situations for building their nests, and materials for lining them. The round or oblong seeds of trees are accommodated to the form of their bills. Such as bear fleshy fruits are resorted to by birds, which have beaks pointed, or crooked like a pick-axe:

In the islands of the regions situated between the Tropics, and along the banks of the great rivers of America, the greatest part of maritime and fluviatic trees, among others, many species of the palm-tree, bear fruits inclosed in very hard shells, whereby they are enabled to float on the surface of the waters, which re-sow them at a great distance; but their covering does not secure them from the attack of the birds. The different tribes of paroquets which have made them their habitation, and of which I have reason to believe that there is a species appropriated to each species of palm-tree, easily find means to open their hard cases with hooked bills, which pierce like an awl and hold fast like pincers.

Nature has farther accommodated animals of a third order, which find in the bark, or in the flower of a plant, as many conveniencies as the quadruped has in a meadow, or the bird in the whole tree: I mean the insects. Certain Naturalists have divided them into six great tribes, which they have characterized according to custom, but to very little purpose, by Greek names. They class them into *coléopterous*, or cased insects, as the scarab tribe, such are our may-bugs, or chafers: into *hemipterous*, or half cases, as the gallinsects, such is the kermés: into *tetrapterous farinaceous*, or four-mealy-winged, as butterflies: into *tetrapterous*, without any addition, or four-naked-winged, as bees: into *dipterous*, or two winged, as the common fly: and into *apterous*, or wingless, as the ant. But these six classes admit of a multitude of divisions and of subdivisions, which unite species of insects of forms and instincts the most dissimilar; and separate a great many others of them which have otherwise a very striking analogy among themselves.

Whatever may be in this, the order of animals in question appears to be particularly appropriated to trees. *Pliny* observes that ants are singularly fond of the grains of the cypress. He tells us, that they attack the cones which contain them, on their half-opening as they arrive at maturity, and plunder them to their very last seed; and he considers it as a miracle of Nature, that an insect so diminutive should destroy the seed of one of the largest trees in the World. I believe we never shall be able to establish in the different tribes of insects, a real order, and in the study of them, that pleasure and utility of which it is susceptible, except by referring them to the different parts of vegetables. Thus we might refer to the nectars of the flowers, the butterflies and flies which are furnished with a proboscis for sipping up their juices; to their stamina, those flies which, like the bee, have spoon-mouths scooped out in their thighs, lined with hair, for collecting their powder, and four wings to assist them in carrying off their booty; to the leaves of plants, the common flies and gallinsects, which have pointed and hollow prongs for making incisions in them, and for drinking up their fluids; to the grains, the scarab race, as the weevil, which is designed to force it's way into the heart of the seed to feed upon it's meal, and which is provided with wings inclosed in cases, to prevent their being injured, and with a file to open for itself

a passage ; to the stem, those worms which are quite naked, because they have no need of being clothed in a substance of wood to shelter them on every side, but they are furnished with augers, by the help of which they sometimes go nigh to destroy whole forests : finally, to the wreck of every sort, the ants which come armed with pincers, and with an instinct of advancing in hosts, to cut to pieces and to carry off every thing that suits their purpose.

The desert of this vast vegetable banquet is hurled down by the rainy torrents to the rivers, and thence to the Sea, where it presents a new order of relation with the fishes. It is worthy of remark, that the most attractive baits which can be presented to them are deduced from the vegetable kingdom, and particularly from the grains, or from the substances of plants having the aquatic characters which we have indicated, such as the hard shell of the Levant, the rush of Smyrna, the juice of the tithymal, the Celtic spikenard, the cummin, the anise, the nettle, the sweet-marjoram, the root of the birthwort, and the seed of the hemp. Thus the relations of these plants with fishes confirm what has been said of those of their grains with the waters.

By referring the different tribes of insects to the different parts of plants, and in that way only, can we discern the reasons for which Nature has been determined to bestow on those diminutive animals figures so extraordinary. We should then comprehend the uses of their utensils, of which the greater part is hitherto unknown ; and we should have continually new occasion to admire the Divine Intelligence, and to perfect our own. On the other hand, such progress in knowledge would diffuse the clearest light over many parts of plants, the utility of which is a world unknown to Botanists, because they have consonances only with animals.

I am persuaded that there is not a single vegetable but what has connected with it at least one individual of each of the six general classes of insects, acknowledged by Naturalists. As Nature has divided each genus of plants into different species, in order to render them capable of growing in different situations ; she has in like manner divided each genus of insects into different species, in order to adapt them to inhabit different species of plants. For this reason she has painted and numbered in a thousand different but invariable ways, the almost infi-

nite divisions of the same branch. For example, we constantly find on the elm the beautiful butterfly, called the gold-brocade, on account of it's rich colouring. That which goes by the name of the four omicrons, and which lives I know not where, always produces descendants impressed with that Greek character four times on their wings. There is a species of bee with five claws, which lives on radiated flowers only ; without those claws, she could not cling fast to the plane mirrors of those flowers, and load herself from their stamina, so easily as the common bee, which usually labours at the bottom of those with a deep corolla.

Not that I imagine any one plant nourishes in it's different varieties all the collateral branches of one family of insects. I believe that each genus of these extends much farther than the genus of plants which serves as it's principal basis. In this Nature manifests another of her Laws, by virtue of which she has rendered that the best which is the most common. As the animal is of a nature superior to the vegetable, the species of the first are more multiplied and more generally diffused than those of the second. For example, there are not so many as sixteen hundred species of plants in the vicinity of Paris ; but within the same compass there are enumerated near six thousand species of flies. This leads me to presume therefore that the different tribes of plants cross with those of animals, which renders their species susceptible of different harmonies. Of this a judgment may be formed from the variety of tastes in birds of the same family. The black-headed yellow-hammer nestles in the ivy ; the red-headed in walls in the neighbourhood of hemp-fields ; the brown yellow-hammer builds on trees by the highway's-side, where she finishes off her nest with horse hair. A dozen species of that bird are enumerated in our climates, each of which has it's particular department. Our different sorts of larks are likewise apportioned to different situations ; to the woods, to the meadows, to the heaths, to arable lands, and to the shores of the Sea.

Very interesting observations may be made respecting the duration of vegetables, which are unequal, though subjugated to the influences of the same elements. The oak serves as a monument to the nations ; and the *nostocium*, which grows at his foot, lives only a single day. All I shall say upon this head in

general is, that the period of their decay is by no means regulated in conformity to that of their growth; neither is that of their fecundity proportioned to their weakness, to climates, or to seasons, as some have pretended. *Pliny* * quotes instances of holmes, of plane-trees, and of cypresses, which existed in his time, and which were more ancient than Rome, that is more than seven hundred years old. He farther tells us, that there were still to be seen near Troy, around the tomb of Ilus, oaks which had been there from the time that Troy took the name of Ilium, which carries us back to an antiquity much more remote.

I have seen in Lower Normandy, in a village church-yard, an aged yew planted in the time of *William* the Conqueror; it is still crowned with verdure, though it's trunk cavernous and through and through pervious to the day, resembles the staves of an old cask. Nay there are bushes which seem to have immortality conferred upon them. We find in many parts of the kingdom hawthorns which the devotion of the Commonalty has consecrated by images of the Virgin, and which have lasted for several ages, as may be ascertained by the inscriptions upon the chapels reared in the vicinity.

But in general Nature has proportioned the duration and the fecundity of plants to the demands of animal life. A great many plants expire as soon as they have yielded their seed, which they commit to the winds. There are some, such as mushrooms, whose existence is limited to a few days, as the species of flies which feed upon them. Others retain their seeds all the Winter through for the use of the birds; such are the fruits of most shrubs.

The fecundity of plants is by no means regulated according to their size; but proportionally to the fecundity of the animal species which is to feed upon them. The pannic and the small millet, and some other gramineous plants, so useful to man and beast, produce incomparably more grains than many plants both greater and smaller than themselves. There are many herbs which perpetuate themselves by their seeds only once a year, but the chickweed renovates itself by it's seeds up to seven or eight times, without being interrupted in the process even by

* Natural History, book xvi. chap. 44

Winter. It produces ripe seeds within six weeks from the time of it's being sown. The capsule which contains them then inverts itself, turning toward the earth, and half opens to leave them at liberty to be carried away by the winds and the rains, which sow them again every where. This plant insures the whole year through the subsistence of the small birds of our climates. Thus Providence is so much the more powerful as the creature is more feeble.

Other plants have relations to animals the more tenderly affecting, in proportion as climates and seasons seem to exercise over the animal the greater degree of severity. Were we enabled to investigate these adaptations to the bottom, they would explain all the varieties of vegetation in every latitude, and in every season. Wherefore, for example, do most of the trees of the North shed their leaves in Winter; and wherefore do those of the South retain theirs all the year round? Wherefore, in defiance of the Winter's cold in the North, do the firs there continue always clothed with verdure? It is a matter of no small difficulty to discover the cause of this; but the end is obviously discernible. If the birch and the larch of the North drop their foliage on the approach of Winter, it is to furnish litter to the beasts of the forest; and if the pyramidical fir there retains it's leaves, it is to afford them shelter amidst the snows. This tree presents to the birds the mosses which are suspended on it's branches, and it's cones replenished with ripe kernels. In their vicinity oftentimes thickets of the service-tree display for their use the shining clusters of their scarlet berries.

In the Winters of our climates, many evergreen shrubs, as the ivy, the privet, and others, which remain loaded with black or red fruit, contrasting strikingly with the snow, as the prime-print, the thorn, and the eglantine, present to the winged creation both a habitation and food. In the countries of the Torrid Zone the earth is clothed with fresh liannes, and shaded with trees of a broad foliage, under which animals find a cool retreat. The trees themselves of those climates seem afraid of exposing their fruits to the burning heat of the Sun: instead of rearing them as a cone, or exhibiting them on the circumference of their heads, they frequently conceal them under a thick foliage, and bear them attached to their trunks, or at the sprouting of their branches: such are the *jacquier*, the banana, the paim-tree

of every species, the *papayer*, and a multitude of others. If their fruits invite not the animals externally, by vivid colours, they call them by the noise which they excite. The lumpish cocoa-nut, as it falls from the height of the tree which bears it, makes the earth resound to a considerable distance. The black pods of the *canneficier* when ripe, and agitated by the wind, produce, as they clash against each other, a sound resembling the tic-tac of a mill. When the grayish fruit of the *genipa* of the Antilles comes to maturity, and falls from the tree, it bounces on the ground with a noise like the report of a pistol.* Upon this signal, more than one guest no doubt resorts thither in quest of a repast. This fruit seems particularly destined to the use of the land-crabs, which are eagerly fond of it, and very soon grow fat on this kind of food. It would have answered no purpose for them to see it on the tree, which they are incapable of climbing: but they are informed of the moment when it is proper for food, by the noise of it's fall.

Other fruits, as the *jacque* and *mango*, affect the sense of smelling in animals so powerfully, as to be perceptible more than the quarter of a league distant, when the fruit is to windward. I believe that this property of emitting a powerful perfume is likewise common to such of our fruits as lie concealed under the foliage, *apricots* for instance. There are other vegetables which manifest themselves to animals, if I may use that expression, only in the night-time. The *jalap* of Peru, or the *belle* of the night, opens not her strongly-scented flowers except in the dark. The flower of the *nasturtium*, or *nun*, which is a native of the same country, emits in the dark a phosphoric light, observed for the first time in Europe by a daughter of the celebrated *Linnaeus*.

The properties of these plants convey a happy idea of those delightful climates, in which the nights are sufficiently calm, and sufficiently luminous to disclose a new order of society among animals. Nay there are insects which stand in no need of any pharos to assist them in steering their nocturnal courses. They carry their lanterns about them; such are the species of luminous flies. They scatter themselves sometimes in the groves of orange-trees, of *papayas*, and of other fruit-trees, in the midst

* Father *du Tertre's* History of the Antilles.

of the darkest nights. They dart at once, by several reiterated beatings of their wings, a dozen of fiery streams, which illuminate the foliage and fruits of the trees whereon they settle with a golden and bluish light;* then, all at once repressing their motion, they plunge again into obscurity. They alternately resume and intermit this sport during the whole night. Sometimes there are detached from them swarms of brilliant sparks of light, which rise into the air like the emanations of a fire-work.

Were we to study the relations which plants have to animals, we should perceive in them the use of many of the parts which are frequently considered as productions of the caprice and of the confusion of Nature. So widely extended are those relations, that it may be confidently affirmed that there is not a down upon a plant, not an intertexture of a shrub, not a cavity, not a colour of leaf, not a prickle, but what has it's utility. Those wonderful harmonies are especially to be remarked with relation to the lodgings and the nests of animals. If in hot countries there are plants loaded with down, it is because there are moths entirely naked, which clip off their fleece and weave it into clothing. There is found, on the banks of the Amazon, a species of reed from twenty-five to thirty feet high, the summit of which is terminated by a large ball of earth. This ball is the workmanship of the ants, which retire thither at the time of the rains, and of the periodical inundations of that river: they go up, and descend along the cavity of this reed, and live on the refuse which is then swimming around them on the surface of the water.

It is, I presume, for the purpose of furnishing similar retreats to many small insects, that Nature has hollowed the stems of most of our plants of the shore. The valisneria,† which grows

* Consult the same Work of *Du Tertre*.

† Consult, with regard to the Valisneria, the voyage of an anonymous English traveller performed in the year 1750, to France, Italy, and the Islands of the Archipelago, in four small volumes, vol. I. It is stored with judicious observations of every kind. Consult likewise, respecting the genipa, and the different fruits, plants, and animals of southern countries, the sprightly Father *du Tertre*, the patriotic Father *Charlevoix*, *John de Laet*, the Historian, and all travellers who have written on the subject of Nature, without the spirit of system, assisted by the light of reason alone.

in the stream of the Rhone,* and carries it's flower on a spiral stem, capable of being drawn out in proportion to the rapidity of the sudden swellings of that river, has holes pierced through at the basis of it's leaves, the use of which is much more extraordinary. If you take up this plant by the root, and put it into a large vessel full of water, you perceive at the basis of it's leaves masses of bluish jelly, which insensibly lengthen into pyramids of a beautiful red. These pyramids presently furrow themselves into flutings, which disengage from the summit, invert themselves all around, and present, by their expansion, very beautiful flowers formed of purple, yellow, and blue rays. By little and little, each of these flowers advances out of the cavity in which it is partly contained, and withdraws to some distance from the plant, remaining however attached to it by a small filament. You then perceive each of the rays of which those flowers are composed assume a motion peculiar to itself, which communicates a circular movement to the water, and precipitates to the centre of each of them all the small bodies which are floating around. If those wonderful expansions are disturbed by any sudden shock, immediately every filament contracts, all the rays close, and all the pyramids retire into their cavities; for those pretended flowers are polypuses.

There are in certain plants parts which may be considered as characters of uncultivated Nature, but which are, like all the rest of her Works, evident proofs of the wisdom and providence of her AUTHOR; such are the prickles. Their forms are varied without end, especially in hot countries. Some are shaped like saws, like hooks, like needles, like the head of a halberd, and like caltrops. Some of them are round like awls, some triangular, like the shoemaker's piercer, and some flattened like a lancet. There is no less variety in their aggregations. Some are arranged on the leaves in balls, like those of the opuntia; others in stripes, like those of the Peruvian taper. Some are

* The Vallisneria also grows in the Delaware, in James-river, and in many of the lakes of North-America. Its real and well-ascertained history is, indeed, very wonderful: but I fear the whole of what Saint-Pierre has said concerning it, is not to be depended upon. It is to be observed, that he does not seem to speak of the plant from his own observation. He has mentioned the spiral scape, or stem, of the (female) plant in a former page. See page 79 of this volume — B S H

invisible, as those of the shrub of the Antilles, known by the name of captain's-wood. The leaves of this formidable plant appear on the upper side smooth and shining; but they are covered on the under side with very delicate prickles, which are inserted in such a manner, that apply your hand to them ever so cautiously, it is impossible to avoid pricking your fingers.

There are other thorns planted only on the stems of plants, others are on their branches. In our climates they are scarcely ever to be found, except on shrubbery, and on a few trees; but in both Indies they are scattered over a great many species of trees. Their very various forms and dispositions have relations, of which the greatest part are to us unknown, to the security and defence of the birds which live upon them. It was necessary that many of the trees of those countries should be armed with thorns, because many quadrupeds are there to be found capable of climbing them, to eat the eggs and the young of birds, such as the monkey, the civet-cat, the tiger, the wild-cat, the musk-rat, the opossum, the wild rat, and even the common rat.

The Asiatic acacia* presents to it's winged inhabitants a retreat absolutely inaccessible to their enemies. It bears no prickles on it's trunk, and in it's branches; but at the height of ten or twelve feet, precisely at the place where the tree begins to branch off, there is a belt of several rows of large thorns, from ten to twelve inches in length, presenting an impenetrable rampart of spikes nearly resembling the iron head of a halberd. The collar of the tree is encircled by it in such a manner, that it is impossible for any quadruped to get up. The acacia of America, improperly called the false-acacia, has it's prickles formed into hooks, and scattered over it's branches, undoubtedly from some unknown relation of opposition to the species of quadruped which makes war on the bird that inhabits it.

* There is a plant of the Asiatic acacia to be seen in the beautiful garden adjacent to the iron gate of Chaillot, which formerly belonged to the virtuous Chevalier de *Gensin*. As to the name of *false-acacia*, given to the acacia of America, I must observe that Nature produces nothing false. She has given varieties of all her productions, in all Countries, in order to bestow upon them relations adapted to the elements and to animals; and when we do not find in these the characters which we have assigned to them, the charge of falsehood is not in justice to be fixed on her Works, but on our systems.

There are in the Antilles Islands trees which have no thorny prickles, but which are much more ingeniously protected than if they had. A plant known in those countries by the name of the prickly thistle, which is a species of creeping taper, attaches it's roots, similar to filaments, to the trunk of one of those trees, and runs to the ground all around it, to a considerable distance, crossing it's branches one over another, and forming an inclosure of them which no quadruped dares to approach. It likewise produces a fruit very grateful to the palate. On beholding a tree, the foliage of which is harmless, filled with birds that have there fixed there habitation, surrounded about the roots by one of those prickly thistles, you are presented with the idea of one of those commercial defenceless cities, apparently accessible on every side, but protected all around by a citadel, encompassing it with extended entrenchments. Thus the tree is on one side, and it's thorn on the other.

Quadrupeds which live on the eggs of birds would be reduced to great distress, did not Nature sometimes produce, on the summits of those very trees, a vegetable of very extraordinary form which opens a passage to them. It is in every respect the opposite of the prickly thistle. It consists of a root of two feet in length, as thick as a man's leg, pricked, as if pierced with a bodkin, and adhering to a branch of the tree by a multitude of filaments, somewhat in the same way that the prickly thistle is affixed to the under part of it's trunk. Like the other, it derives it's nourishment from the tree, and emits from ten to twelve great leaves in form of a heart, of about three feet in length and two in breadth, resembling the leaves of the nymphæa. Father *du Tertre* calls it the false-root of China. What is still more extraordinary, it lets fall from the top of the tree on which it is placed, in a perpendicular direction, very strong cordage, of the size of a quill the whole length through, which takes root on reaching the ground. The plant itself emits no smell, but this cordage savours strongly of garlic. Undoubtedly, when a monkey, or some such clambering animal perceives this broad standard of verdure, to no purpose does the tree oppose around it's root a fortification of thorns, this signal announces that he has a friend within the fortress: the smell of the cordage, which descends down to the ground, directs him to the scaling ladder, even during the night; and while the birds are

sleeping in security on their nests, confident in the strength of their bulwark, the enemy gets possession of the town through the suburbs.

In those countries, the thorns upon the trees afford protection even to the insects. Bees there carry on their honey-making processes in the aged trunks of prickly trees hollowed by the hand of Time. It is very remarkable that Nature, who has provided this resource for the bees of America, has withheld from them a sting, as if those on the trees were sufficient for their defence. I believe that to this reason it may be ascribed, though no attention has been paid to it, that we have never hitherto been able to rear in the Antilles Islands the honey-bees of the country. They refused no doubt to take up their abode in domestic hives, because they did not consider themselves as there in a state of security; but might perhaps have been induced to make that choice, had the hives to which they were invited been decorated and defended by thorns.*

If Nature employs prickly vegetables for the defence even of flies against the attacks of quadrupeds, she sometimes makes use of the same means for delivering quadrupeds from the persecution of common flies. She has in truth bestowed on those which are the most exposed to it, manes and tails, armed with long hair, to drive them away; but the multiplication of those insects is so rapid in warm and humid seasons and countries, as to threaten destruction to the whole race of animals. One of the vegetable barriers opposed to them by Nature is the *dionæa muscipula*. This plant bears on one and the same branches opposite little leaves, besmeared with a sugary liquor resembling manna, and studded with very sharp prickles. When a fly perches on one of those little leaves, they instantly close with a spring, like the jaws of a wolf-trap, and the fly is spitted through and through.

* I have shown, in an express memoir on the subject, that the common honey-bee, (*apis mellifica*,) is not a native of America. So far I agree with Saint-Pierre: and I agree with him, also, that nature has withheld from several of the native honey-making species a sting. But on the other hand, it is certain that South-America at least, produced some species of honey-bees *with stings*. As to what our author has said of the attachment of the defenceless species of bees to prickly trees, &c., it is an assertion, or hypothesis, which can demand no serious notice.—B. S. B.

There is another species of the *dionæa* which catches those insects with it's flowers. When a fly attempts to extract it's nectareous juices, the corolla, which is tubulous, shuts at the collar, seizes the insect by the proboscis, and thus puts it to death. This plant is cultivated in the Royal Garden. It is observable, that it's cup-formed flower is white, radiated with red, and that these two colours universally attract flies, from their natural avidity of milk and blood.

There are aquatic plants armed with thorns proper for catching fishes. You may see in the Royal Garden an American plant called *martinia*, the flower of which has a very agreeable odour, and which, from the form of it's rounded leaves, the sleekness of their tails and of their stems, has all the aquatic characters which have been indicated. It has this farther character peculiar to itself, that it transpires so copiously as to appear to the touch in a state of continual humidity. I can have no doubt therefore that this plant grows in America on the brink of the water. But the shell which envelops it's seed possesses a very extraordinary nautical character. It resembles a fish half-dried, white and black, with a long fin upon the back. The tail of this fish is drawn out into great length, and terminates in a very sharp point, bent into the form of a fish-hook. This tail usually separates into two, and thus presents a double hook. The configuration of this vegetable fish is completely similar in size and in form to the hook which is employed at sea for catching goldneys, and at the head of which is figured, in linen, a flying-fish, with this exception, that the goldney-hook has but one curve and barb, whereas the shell of the *martinia* has two, which must render it's effects more infallible. This shell contains several black seeds, shrivelled, and similar to the globules of the sheeps dung flattened.

As I possess but few books on Botany, I did not know of what country the *martinia* was a native; but having lately consulted the Work of *Linnaeus*, I find that we got it from Vera-Cruz. The celebrated Naturalist whom I have just mentioned, discovers in this shell no resemblance but that of a woodcock's head; but had he ever seen the hook for goldneys he could not possibly have hesitated about preferring this similitude in the appearance, in as much as the extremity of this pretended beak bends back into two hooks, which prick like needles, and are,

as well as the whole shell, and the tail by which it is united to the stem, of a ligneous and horny substance not easily broken asunder. *John de Laet** tells us, that the land of Vera-Cruz is on a level with the Sea, and that it's port, called *St. John de Hulloa*, is formed by a small island no higher than the water; so that, says he, when the tide rises very high, the land wholly disappears.

Such inundations are very common at the bottom of the Gulph of Mexico, as we learn from the relation which *Dampier* has given us of the bay of Campeachy, which is in that vicinity. Hence I presume that the martinia, which grows on the inundated shores of Vera-Cruz, has certain relations, which we know nothing of, to the fishes of the Sea; in as much as the seeds of several trees and plants of those countries, described by *John de Laet*, possess very curious nautical forms. A drawing of the martinia, taken from nature, is presented in this Work.

But there is no occasion to resort to foreign plants for ascertaining the existence of vegetable relations to animal. The bramble, which affords in every field through which we pass a shelter to so many birds, has it's prickles formed into hooks; so that it not only prevents the cattle from disturbing the birds' retirement, but frequently lays them under contribution for a flake of wool or hair proper for finishing off their nests, as a reprisal for hostility committed, and an indemnification for damages sustained. *Pliny* alleges that this gave rise to the pretended animosity between the linnet and the ass. This quadruped, whose palate is proof against prickles, frequently browses on the shrub in which the linnet builds her nest. She is so terrified at his voice, that on hearing it, says he, she kicks down her eggs; and her callow brood die with the terror of it. But she makes war upon him in her turn, by fixing her attack on the scratches made in his hide by the prickles, and by picking the flesh in those tender parts to the very bone. It must be a very amusing spectacle to view the combat between the little melodious songster, and the dull, braying, but otherwise inoffensive animal.

* History of the West-Indies, book v. chap. 18.

Did we know the animal relations of plants, we should possess sources of intelligence respecting the instincts of the brute creation with which we are totally unacquainted. We should know the origin of their friendships and of their animosities, at least as to those which are formed in society ; for with regard to such as are innate, I do not believe that the cause of them was ever revealed to any man. These are of a different order, and belong to another world. How should so many animals have entered into life under the dominion of hatred, without having been offended ; furnished with skill and industry, without having served an apprenticeship ; and directed by an instinct more infallible than experience ? How came the electrical power to be conferred on the torpedo, invisibility on the cameleon, and the light of the stars themselves on a fly ? Who taught the aquatic-bug to slide along the waters, and another species of the same denomination to swim upon the back ; both the one and the other for catching their prey, which hovers along the surface ? The water-spider is still more ingenious. She incloses a bubble of air in a contexture of filaments, takes her station in the middle, and plunges to the bottom of the brook, where the air-bubble appears like a globule of quick-silver. There she expatiates under the shade of the nymphæa, exempted from the dread of every foe. If in this species two individuals different in sex happen to meet, and to suit each other, the two globules, being in a state of approximation, become united into one, and the two insects are in the same atmosphere. The Romans who constructed on the shores of Baia saloons underneath the waves of the Sea, in order to enjoy the coolness and the murmuring noise of the waters, during the heats of Summer, were less dexterous, and less voluptuous. If a man united in himself those marvellous faculties which are the portion of insects, he would pass for a god with his fellow-creatures.

It is of importance for us to be acquainted with at least such insects as destroy those which are offensive to Man. We might turn their mutual hostility to good account, by converting it into the means of our own repose. The spider catches the flies in nets ; the formicaleo surprises the ants in a tunnel of sand ; the four winged ichneumon, seizes the butterfly on the wing. There is another ichneumon, so small and so cunning, that it lays an egg in the anus of the vine-fretter. Man has it in his power

to multiply at pleasure the families of insects which are useful to him ; and may find means of diminishing such as make depredations on his agricultural possessions. The small birds of our groves tender him, to the same effect, services of still greater extent, and accompanied with other circumstances inexpressibly agreeable. They are all directed by instinct to live in this vicinity, and about the pastures and habitations of his flocks and herds. A single species of them might frequently be sufficient to protect the cattle from the insects which infest them through the Summer.

There is in the North a gadfly, called *Kourbma* by the Laplanders, and by the Learned, *æstrus rangiferinus*, which torments the domestic rein-deer to such a degree as to force them in agony to the mountains, and sometimes actually plagues them to death, by depositing it's eggs in the skin of the animal. Many dissertations have, as the custom is, been composed on this subject, but no remedy for the evil has been proposed. I am convinced there must be birds in Lapland which would deliver the rein-deer from this formidable insect, did not the Laplanders terrify them away by the noise of their fowling-pieces. These arms of civilized Nations have overspread with barbarism all our plains. The birds, destined to embellish the habitation of Man, withdraw from it, or approach with timidity and mistrust. The sound of musquetry ought to be prohibited at least around the haunts of the harmless cattle. When the birds are not scared away by the fowler they follow their instincts.

I have frequently seen in the Isle of France a species of starling, called martin, imported thither from India, perch familiarly on the back and horns of the oxen to pick them clean. To this bird that island stands indebted at the present day for the destruction of the locusts, which in former times committed such ravages upon it. In those of our European rural scenes which still exhibit, on the part of Man, some degree of hospitality toward the innocent warblers, he has the pleasure of seeing the stork build her nest on the ridge of his house, the swallow flutter about in his apartments, and the wagtail, along the bank of the river, frisk around his sheep to protect them from the gnats.

The foundation of all this variety of pleasant and useful knowledge is laid in the study of plants. Each of them is the

focus of the life of animals, the species of which there collect in a point as the rays of a circle at their centre.

As soon as the Sun, arrived in his annual progression at the sign of the Ram, has given the signal of Spring to our Hemisphere, the rainy and warm wind of the South takes it's departure from Africa, swells the Seas, elevates the rivers above their banks, so that they inundate the adjacent plains, and fatten them with their fertilizing slime ; and levels in the forests the aged trees, the decayed trunks, and every thing that presents an obstacle to future vegetation. It melts the snows which cover our fields, and forcing it's way to the very Pole, it breaks to pieces and dissolves the enormous masses of ice which Winter had there accumulated. When this revolution, known all over the Globe by the name of the equinoctial gale, has taken place in the month of March, the Sun revolves night and day around our Pole, so that there is not a single point in the whole northern Hemisphere that can escape his heat.

Every step he advances in his course through the Heavens a new plant makes it's appearance on the Earth. Each of them arises in succession, and occupies it's proper station at the hour assigned to it ; at one and the same instant it receives the light in it's flowers and the dew of Heaven on it's foliage. In proportion to it's progress in growth, the different insect-tribes which thence derive their nourishment likewise display their existence, and unfold their characters. At this epocha too each species of bird resorts to the species of plant with which she is acquainted, there to build her nest, and to feed her young with the animal prey which it presents to her, to supply the want of the seeds which it has not as yet produced. We presently behold the tribes of birds of passage flock thither in quest of the portion which Nature has provided for them likewise. First comes the swallow to preserve our habitations from the vermin, by planting her nest around us. The quail forsakes Africa, and grazing the billows of the Mediterranean in troops innumerable, is scattered over the boundless meadows of the Ukraine. The heathcock pursues his course northward as far as Lapland. The wild ducks and geese, the silvery swans, forming long triangular squadrons in the air, advance to the very islands adjacent to the Pole. The stork, in former times adored in Egypt, which she abandons, crosses over Europe, halting here and

there to take repose, even in great cities, on the roofs of the houses of hospitable Germany. All these birds feed their young on the insects and reptiles which the newly expanded plants have fostered into life.

Then too it is that the fishes issue in legions from the northern abysses of the Ocean, allured to the mouths of rivers by clouds of insects, which are confined entirely to their waters, or expand into life along their banks. They stem the watery current in shoals, and advance, skipping and springing, up to the very sources of the stream; others, as the north-capers, suffer themselves to be swept into the general current of the Atlantic Ocean, and appear in form of a ship's bottom on the coasts of Brasil, and on those of Guinea.

Quadrupeds themselves likewise then undertake long peregrinations. Some proceed from the South to the North, with the Sun; others from East to West. There are some which coast along the rugged chains of mountains; others follow the courses of rivers which have never been navigated. Lengthened columns of black cattle pasture in America, along the banks of the Méchassipi, which they cause to resound with their bellowing. Numerous squadrons of horses traverse the rivers and the deserts of Tartary; and wild sheep stray bleating amidst its vast solitudes. These flocks have neither overseer nor shepherd to guide them through the desert, to the music of the pipe: but the expansion of herbage which they know, determines the moment of their departure, and the limits of their progress. It is then that each animal inhabits his natural situation, and reposes under the shade of the vegetable of his fathers. It is then that the chains of harmony exert all their force, and that all, being animated by consonances, or by contrasts, the air, the waters, the forests, and the rocks, seem to be vocal, to be impassioned, to be transported with delight.

But this vast concert can be comprehended by celestial Intelligences only. To Man it is sufficient, in order to study Nature with advantage, that he limit his researches to the study of one single vegetable. It would be necessary for this purpose to make choice of an aged tree in some solitary situation. From the characters which have been indicated, a judgment might easily be formed whether it be in its natural position; but still better from its beauty, and from the accessories which

Nature uniformly places in connection with it, where the hand of Man has not interposed to derange the operations. The student would first observe it's elementary relations, and the striking characters which distinguish the different species of the same genus, some of which grow at the sources of rivers, and others at the place of their discharge into the Ocean. He would afterwards examine it's convolvuluses, it's mosses, it's mistletoes it's scolopendræ, the mushrooms of it's roots, nay the very grasses which grow under it's shade. He would perceive in each of it's vegetables new elementary relations, adapted to the places which they occupy, and to the tree which sustains or shelters them.

His attention might next be directed to the various species of animals which resort to it as a habitation, and he would presently be convinced, that from the snail up to the squirrel, there is not a single one but what has determinate and characteristic relations to the dependencies of it's vegetation.

If the tree in question were growing in a forest, itself too of considerable antiquity, it would most probably have in it's vicinity the tree which Nature designed should contrast with it in the same site, as for example the birch and the fir. It is farther probable that the accessory vegetables and animals of this last, would in like manner form a contrast with those of the first. These two spheres of observation would mutually illuminate each other, and would diffuse the clearest light over the manners of the animals which frequent them. We should then have a complete chapter of that immense and sublime History of Nature, the alphabet of which is hitherto unknown to us.

I am fully convinced that without fatigue, and almost without any trouble, discoveries the most curious might be made. Were we to restrict our enquiries but to one single compartment, we should discover a multitude of the most enchanting harmonies. In order to enjoy some imperfect sketches of this kind we must have recourse to travellers. Our Ornithologists fettered by methods and system, only think of swelling their catalogue, and distinguish nothing in birds save the feet and the bill. It is not in the nests that they observe them, but in hunting, and in their pouch. They even consider the colours of their plumage as accidents. It was not by chance however that Nature, on the shores of Brasil, bestowed a beautiful carnation

colour, with a border of black, on the extremity of the wings of the *Ouara*, a species of curlew inhabiting the sea-green foliage of the *paletuvier*, which grows in the bosom of the waves, and bears no apparent flowers. The *savia*, another bird of the same climate, is yellow over the belly, with the rest of the plumage gray. It is about the size of a sparrow, and perches on the pepper-plant, the flowers of which have no lustre, but whose grains are eaten by this bird, and re-sown wherever she takes her flight.

To those correspondences must be added such as pertain to site, which itself derives so much beauty from the overshadowing vegetable. These harmonies are detailed by Father *Francis d'Abbeville*. If credit is to be given to the History of Voyages by the Abbé *Prevost*, there is on the banks of the Senegal a fluviatic tree, the leaves of which are thorny, and the branches pendent, in form of an arch. It serves as a habitation to birds called kurbalos, or fishers, of the size of a sparrow, variously coloured. Their bill is very long, and armed with little teeth resembling a saw. They build a nest of the bulk of a pear, composed of earth, feathers, straw, moss, and attach it to a long thread, suspended from the extremity of the branches which project over the river, in order to secure it from the serpents and monkeys, which sometimes contrive to clamber up after them. You would take those nests, at a little distance, for the fruit of the tree: and some of those trees contain to the number of a thousand. You perceive the kurbalos fluttering incessantly along the water, and entering into their nests with a motion that dazzles the eyes.

According to Father *Charlevoix*, there grows in Virginia, on the brink of the lakes, a laurel-leaved yew-tree which pushes several stems from it's root, the branches of which embrace all the surrounding trees, and climb to the height of more than sixteen feet. They form in Summer an impenetrable shade, and in Winter a temperate retreat for the birds. It's flowers have no very striking appearance, and it's fruit grows in round clusters, loaded with black grains. This yew has for it's principal inhabitant a very beautiful kind of jay. The head of that bird is adorned with a long black crest which it can erect at pleasure. It's back is of a deep purple. The wings are black on the inside, blue externally, and white at the extremities, with white

stripes across every feather. Its tail is blue and marked with the same stripes as the wings ; and its cry is far from being disagreeable.

There are birds which lodge not upon their favourite plant, but opposite to it. Such is the colibri, which frequently nestles, in the Antilles Islands, on the straw which thatches a cottage, in order to live under the protection of Man. In our climates, the nightingale constructs his nest under covert of a bush, choosing in preference such situations as repeat an echo, and carefully observing to expose it to the morning sun. Having employed such precautions, he takes his station in the vicinity, against the trunk of a tree ; and there, confounded with the colour of its bark, and motionless, he becomes invisible. But he presently animates the obscure retreat which he has chosen by the divine melody of his song, and effaces all the brilliancy of plumage by the charms of his music.

But whatever enchantment may be diffused by plants and animals over the situations which have been assigned to them by Nature, I never can consider a landscape as possessing all its beauty unless I perceive in it at least one little hut. The habitation of Man confers on every species of vegetable a new degree of interest or of majesty. Nothing more is necessary in many cases than a tree, in order to characterize in a country the wants of a whole Nation, and the care of Providence. I love to see the family of an Arab under the date-tree of the desert, and the boat of an islander of the Maldivias loaded with cocoanuts, under the cocoa-trees of their gravelly strands. The hovel of a poor unindustrious Negro gives me pleasure, under the shade of a great gourd-plant, which exhibits his complete set of household furniture. Our magnificent hotels in great cities are the habitations of tradesmen merely : in the country, they are transformed into castles, palaces, temples. The long avenues which announce them confound themselves with those which form the communication of empires. This is not in truth what I consider as most interesting in rural scenery. To the most ostentatious exhibition of splendor I have frequently preferred the view of a little hamlet of fishermen, built by the side of a river. With inexpressible delight have I sometimes reposed under the shade of the willows and of the poplars, on which were suspended the bow-nets composed of their own branches.

I shall now proceed, in my usual superficial manner, to take a rapid glance of the harmonies of plants with man ; and that I may introduce at least something of order into a subject so rich in matter, I shall farther divide those harmonies, relatively to Man himself, into *clementary*, into *vegetable*, into *animal*, and into *human* properly so called, or *alimentary*.

HUMAN HARMONIES OF PLANTS.

Elementary Harmonies of Plants relatively to Man.

If we consider the vegetable Order under the simple relations of strength and magnitude, we shall find it divided, with a sufficient degree of generality, into three great classes, namely, into herbs, into shrubs, and into trees. It is to be remarked, in the first place, that herbs are of a substance pliant and soft. Had they been ligneous and hard, like the young boughs of trees, to which it might appear they ought naturally to have a resemblance, as they grow on the same soil, the greatest part of the Earth would have been inaccessible to the foot of Man, till the fire or the hatchet had cleared the way for him. It was not by chance therefore that so many grasses, mosses, and herbs assumed a soft and yielding texture, nor from want of nourishment, or of the means of expansion ; for some of those herbs rise to a very great height, such as the banana of India, and several ferulaceous plants of our own climates, which attain the stature of a little tree.

On the other hand, there are ligneous shrubs which do not exceed the generality of herbs in height ; but they grow for the most part on rugged and steep places, affording to Man the means of clambering up with facility, for they shoot out of the very clefts of the rocks. But as there are rocks which have no clefts, and which present the perpendicularity of a wall, there are likewise creeping plants which take root at their bases, and which, fixing themselves to their sides, rise in close cohesion to a height surpassing that of many of the tallest trees : such are the ivy, the virgin-vine, and a great number of the *lianne* tribe, which mantle along the rocks of southern regions.

Were the Earth covered with vegetables of this sort, it would be impossible to walk over it. It is very remarkable that when uninhabited islands were discovered, some were found clothed

with forests, as the Island of Madeira ; others in which there was nothing but herbage and rushes, as the Malouine Islands, at the entrance of Magellan's Strait ; others carpeted with mosses simply, such as several little isles on the coasts of Spitzbergen ; others, in great number, on which these several vegetables were blended ; but I do not know of a single one which was found to contain only shrubbery and liannes. Nature has placed this class only on places not easily to be scaled, in order to facilitate access to Man. It may be affirmed, that no precipice presents a surface so perpendicular as to be insurmountable with their assistance. Thus aided the ancient Gauls were on the point of storming the capitol.

As to trees, though they are replenished with a vegetative force which elevates them to a very considerable height, the greater part of them do not send out their first branches but at a certain distance from the ground. So that though they form, when they have attained a certain degree of elevation, an intertexture impenetrable to the Sun, which they extend to a great distance around, they leave however about their roots, avenues sufficient to render them accessible, so that the forests may be traversed with ease and expedition.

Such then are the general dispositions of vegetables upon the Earth relatively to the occasion which Man had to range over it. The herbage serves as a carpet to his feet ; the shrubbery as a scaling ladder to his hands ; and the trees are so many parasols over his head. Nature, after having established those proportions between them, has distributed them in all the varieties of situation, by bestowing on them, abstractly from their particular relations to the elements, and to the animal creation, qualities the best adapted to minister to the necessities of Man, and to compensate in his favour the inconveniences of climate.

Though this manner of studying her Works be now held in contempt by most Naturalists, to it however shall our researches be limited. We have just been considering plants according to their shape and size, after the manner of gardeners ; we proceed farther to examine them as is done by the wood-feller, the huntsman, the carpenter, the fisherman, the shepherd, the sailor, nay, the nosegay-maker. It is of small importance whether we be learned, provided we cease not to be men.

It is in the countries of the North, and on the summit of cold mountains, that the pine grows, and the fir and the cedar, and most part of resinous trees, which shelter man from the snows by the closeness of their foliage, and which furnish him during the Winter season with torches, and fuel for his fire-side. It is very remarkable that the leaves of those ever-green trees are filiform, and extremely adapted by this configuration, which possesses the farther advantage of reverberating the heat like the hair of animals, for resistance to the impetuosity of the winds that beat with peculiar violence on elevated situations. The Swedish Naturalists have observed that the fattest pines are to be found on the dryest and most sandy regions of Norway. The larch, which takes equal pleasure in the cold mountains, has a very resinous trunk.

Mathiola, in his useful commentary on *Dioscorides*, informs us, that there is no substance more proper than the charcoal of those trees for promptly melting the iron minerals, in the vicinity of which they peculiarly thrive. They are besides loaded with mosses, some species of which catch fire from the slightest spark. He relates, that being obliged on a certain occasion to pass the night in the lofty mountains of the Strait of Trento, where he was botanizing, he found there a great quantity of larches (*larix*) bearded all over, to use his own expression, and completely whitened with moss. The Shepherds of the place willing to amuse him, set fire to the mosses of some of those trees, which was immediately communicated with the rapidity of gunpowder touched with the match. Amidst the obscurity of the night, the flame and the sparks seemed to ascend up to the very Heavens. They diffused, as they burnt, a very agreeable perfume. He farther remarks, that the best agaricum grows upon the larch, and that the arque-busiers of his time made use of it for keeping up fire, and for making matches. Thus Nature, in crowning the summit of cold and ferruginous mountains with those vast vegetable torches, has placed the match in their branches, the tinder at their foot, and the steel at their roots.

To the South, on the contrary, trees present in their foliage, fans, umbrellas, parasols. The latanier carries each of it's leaves painted as a fan, attached to a long tail, and similar, when completely displayed, to a radiating Sun of verdure.

Two of those trees are to be seen in the Royal Garden. The leaf of the banana resembles a long and broad girdle, which undoubtedly procured for it the name of Adam's fig-tree. The magnitude of the leaves of several species of trees increases in proportion as we approach the Line. That of the cocoa-tree with double fruit, of the Schelles islands, is from twelve to fifteen feet long, and from seven to eight broad. A single one is sufficient to cover a numerous family. One of those leaves is likewise to be seen in the Royal Cabinet of Natural History. That of the talipot of the Island of Ceylon is of nearly the same size.

The interesting and unfortunate *Robert Knox*, who has given the best account of Ceylon which I am acquainted with, tells us, that one of the leaves of the talipot is capable of covering from fifteen to twenty persons. When it is dry, continues he, it is at once strong and pliant, so that you may fold and unfold it with pleasure, being naturally painted like a fan. In this state it is not bigger than a man's arm, and extremely light. The natives cut it into triangles, though it is naturally round, and each of them carries one of those sections over his head, holding the angular part before, in his hand, to open for himself a passage through the bushes. The soldiers employ this leaf as a covering to their tents. He considers it, and with good reason, as one of the greatest blessings of Providence, in a country burnt up by the Sun, and inundated by the rains for six months of the year.

Nature has provided in those climates parasols for whole villages; for the fig-tree, denominated in India the fig-tree of the Banians, a drawing of which may be seen in *Tavernier*, and in several other travellers, grows on the very burning sand of the sea-shore, throwing from the extremity of it's branches a multitude of shoots, which drop to the ground, there take root, and form around the principal trunk, a great number of covered arcades, whose shade is impervious to the rays of the Sun.*

* The following is extracted from my *Elements of Botany*, printed at Philadelphia, in 1803. "The leaves of certain vegetables acquire a very great size. It is curious, too, to remark that it is only in the hot or hottest portions of the globe, that we find the largest leaves. I believe that the cold climates, and even those which are moderately warm, do not furnish us with any instances of very large leaved trees. It does seem, that the magnitude of the

In our temperate climates we experience a similar benevolence on the part of Nature. In the warm and thirsty season, she bestows upon us a variety of fruits replenished with the most refreshing juices, such as cherries, peaches, melons; and as Winter approaches, those which warm and comfort by their oils, such as the almond and the walnut. Certain Naturalists have considered even the ligneous shells of these fruits as a preservative against the cold of the gloomy season; but these are, as we have seen, the means of floating and of navigating. Nature employs others, with which we are not acquainted, for preserving the substances of fruits from the impressions of the air. For example she preserves through the whole Winter many species of apples and pears, which have no other covering than a pellicle so very thin that it is impossible to determine how fine it is.

Nature has placed other vegetables in humid and dry situations, the qualities of which are inexplicable on the principles of our Physics, but which admirably harmonize with the necessities of the men who inhabit those places. Along the water's side grow the plants and the trees which are the driest, the lightest, and consequently the best adapted to the purpose of crossing the stream. Such are reeds which are hollow, and rushes which are filled with an inflammable marrow. It requires but a very moderate bundle of rushes to bear the weight of a very heavy man upon the water. On the banks of the lakes of the North are produced those enormous birch-trees, the bark of a single one of which is sufficient to form a large canoe.

leaves of certain species of tree increases as we approach the line. * In the cold climates, we find no Palms, nor any other trees, with leaves so large as to be capable of sheltering whole families from the inclemency of the weather. Why should we doubt (when a vast system of benevolence is so conspicuous in the earth) that in giving to the vegetables of hot climates such capacious leaves, the Author of the universe had consulted the health, the comforts, and the pleasures of the human inhabitants, destined to live beneath the scorching rays of the sun? But man is not the only animal that derives advantages from the large-spreading leaves of tropical trees. The birds and many other animals are equally benefited. Destitute of this shelter, many species would be nearly incapable of subsisting in the countries in which they reside; and, in particular, they would be incapable (unless their instinctive operations were essentially varied) of rearing their young." Part 1. p. 62.

B. S. B.

* "The amiable Bernardin De Saint-Pierre."

This bark is similar to leather in pliancy, and so incorruptible by humidity, that in Russia I have seen some of it extracted from under the earth which covered powder magazines, perfectly sound, though it had lain there from the time of *Peter the Great*.

If we may depend on the testimony of *Pliny* and of *Plutarch*, there were found at Rome, four hundred years after the death of *Numa*, the books which that great King had commanded to be deposited with his body in the tomb. The body was entirely consumed; but the books which treated of Philosophy and Religion, were in such a state of preservation, that *Petilius*, the Pretor, undertook to read them by command of the Senate. On the report which he made respecting their contents, they were ordered to be burnt. They were written on the bark of the birch-tree. This bark consists of an accumulation of ten or twelve sheets, white and thin like paper, the place of which it supplied to the ancients.

Nature presents to Man different trajectiles on different shores. She has planted on the banks of the rivers of India the bamboo, an enormous reed which rises there sometimes to the height of sixty feet, and swells to the size of a man's thigh. The part comprehended between two of its joints is sufficient to bear a man up on the water. The Indian places himself upon it a-straddle, and so crosses a river, swimming along by the motion of his feet. The Dutch Navigator, *John Hugo de Linschoten*, an author of reputation, assures us that the crocodile never touches persons who are passing rivers in this manner, though he frequently attacks canoes, and even the boats of Europeans. *Linschoten* ascribes the abstinence of this voracious animal to an antipathy which he has to that species of reed.

Francis Pyrrard, another traveller, who has observed Nature with a careful eye, informs us that there grows on the shores of the Maldivia Islands a tree called *candou*, the wood of which is so light that it serves as cork for the fishermen,* I think I was once possessed of a log of wood of that species. It was stripped of the bark, perfectly white, of the thickness of my arm, about six feet long, and so light that I could easily lift it by my finger and thumb. In these same islands, and on the same

* See *Pyrrard's Voyage to the Maldivia Islands*, page 38.

strands, rises the cocoa-tree, which there attains a higher degree of beauty than any where else in the World. Thus the tree of all others most useful to mariners grows on the shores of the Seas most frequented by men of that description. All the world knows that the vessel is there constructed of it's timber, that it's leaves are formed into sails, that the trunk serves for a mast, that the hempen substance called *caira*, which surrounds it's fruit, is wrought into cordage, and when the whole is ready for sea, a cargo of cocoa-nuts is the lading. It is farther remarkable that the cocoa-nut, before it comes to perfect maturity, contains a liquor which is an excellent antiscorbutic.

Is it not then a miracle of Nature, that this fruit, replenished with such milk, should come to perfection on the barren strand, and within the washing of the briny Deep? Nay it is only on the brink of the Sea that the tree which bears it arrives at it's highest beauty; for few are to be seen in the interior of countries.

Nature has placed a palm-tree of the same family, but of different species, on the summit of the mountains of the same climates: it is the palmist. The stem of this tree is sometimes above a hundred feet high, it is perfectly straight, and bears on it's summit all the foliage which it has, a bunch of palms, from the midst of which issues a long roll of painted leaves resembling the staff of a lance. This roll contains, in a sort of coriaceous sheath, leaves ready to shoot, which are very good for eating before their expansion. The trunk of the palmist is woody only at the circumference, and it is so hard as to resist the edge of the best tempered hatchet. It may be cleft with the utmost ease from end to end, and is filled inwardly with a spongy substance which may be easily separated. Thus prepared it serves to form, for conducting waters frequently diverted from their course by the rocks which are at the summit of mountains, tubes which are not corruptible by humidity. Thus the palm-tree gives to the inhabitants of those regions the means of constructing aqueducts at the source of rivers, and ships at the place of their discharge.

Other species of trees render them the same services in other situations. On the shores of the Antilles Islands grows the *acajou*, there called, but improperly, the cedar, on account of it's incorruptibility. It arrives at such a prodigious size, that out of one log of it they make a boat capable of carrying so many as forty

men.* This tree possesses another quality, which in the judgment of the best observers ought to render it invaluable for the marine service; namely this, it is the only one of those shores which is never attacked by the sea-worm, an insect so formidable to every other species of timber which floats in the seas of that region, as to devour whole squadrons in a very little time, and in order to preserve them, lays us under the necessity for many years past, of sheathing their bottoms with copper. But this beautiful tree has found enemies more dreadful than the worm, in the European inhabitants of those Islands, who have almost extirpated the whole race of them.

The manner in which Providence has contrived a supply for the thirst of Man in sultry places is no less worthy of admiration. Nature has placed amidst the burning sands of Africa, a plant whose leaf, twisted round like a cruet, is always filled with a large glassfull of fresh-water; the gullet of this cruet is shut by the extremity of the leaf itself, so as to prevent the water from evaporating. She has planted on some parched districts of the same country a great tree, called by the Negroes *Boa*, the trunk of which, of a prodigious bulk, is naturally hollowed like a cistern. In the rainy season it receives it's fill of water, which continues fresh and cool in the greatest heats, by means of the tufted foliage which crowns it's summit. Finally, she has placed vegetable fountains on the parched rocks of the Antilles. There is commonly found on them a lianne, called the water lianne, so full of sap that if you cut a single branch of it, as much water is immediately discharged as a man can drink at a draught: it is perfectly pure and limpid.

In the swamps of the Bay of Campeachy travellers find relief of another kind. Those swamps, on a level with the Sea, are almost entirely inundated in the rainy season, and become so parched on the return of dry weather, that many huntsmen who happen to miss their way in the forests with which they are covered, actually perish with thirst. The celebrated traveller *Dampier* relates that he several times escaped this calamity, by means of a very extraordinary species of vegetation, which had been pointed out to him on the trunk of a kind of pine very common there; it resembles a packet of leaves piled one over

* Consult Fathers *Labat* and *Du Tertre*.

another in tiers ; and on account of it's form, and of the tree on which it grows, he calls it the pine-apple. This apple is full of water, so that on piercing it at the basis with a knife, there immediately flows from it a good pint of very clear and wholesome water. Father *du Tertre* informs us that he has several times found a similar refreshment in the leaves, rounded like a cornet, of a species of balizier, which grows on the sandy plains of Guadaloupe. I have been assured by many of our sportsmen, that nothing was more proper for the quenching of thirst than the leaves of the mistletoe, which grows on many trees.

Such are, in part, the precautions employed by Providence for compensating, in favour of Man, the inconveniences of every climate ; by opposing to the qualities of the elements contrary qualities in vegetables. I shall pursue them no farther, for I believe the subject to be inexhaustible. I am persuaded that every Latitude, and every season, has it's own, which are appropriated to it, and that every parallel varies them in every degree of Longitude.

Vegetable Harmonies of Plants with Man.

Were we now to examine the vegetable relations of plants to Man, we should find them to be infinite in number ; they are the perpetual sources of our arts, of our manufactures, of our commerce, and of our enjoyments ; but in our usual way, we shall just run over a few of their natural and direct relations, with which Man has intermingled nothing of his own.

To begin with their perfumes, Man appears to me the only being endowed with sensibility who is affected by these. Animals, it is granted, and especially bees and butterflies, have certain plants proper to themselves, which attract or repel them by their emanations ; but these affections seem to be connected with their necessities. Man alone is sensible to the perfume and lustre of flowers, independently of all animal appetite. The dog himself, who from his domestic habits assumes so powerful a tincture of the manners and of the tastes of Man, appears totally insensible to that enjoyment. The impression which flowers make upon us seems connected with some moral affection ; for there are some which enliven us, whereas others dispose us to melancholy, without our being able to assign any

other reasons for it than those which I have endeavoured to unfold in examining some general Laws of Nature.

Instead of distinguishing them as yellow, red, blue, violet, we might divide them into gay, into serious, into melancholy : their character is so expressive, that lovers in the East employ their shades to describe the different degrees of their passion. Nature makes frequent use of it relatively to us with the same intention. When she wants to keep us at a distance from a marshy and unwholesome place, she scatters there poisonous plants, which present dingy colours and offensive smells. There is a species of arum which grows in the morasses of Magellan's Strait, whose flower exhibits the appearance of an ulcer, and exhales an odour so strong of putrid flesh, that the flesh-fly resorts to it to deposit her eggs.

But the number of fetid plants is of no great extent. The Earth is clothed with flowers which for the most part have very pleasing hues and perfumes. I wish time would permit me to say something of the simple aggregation of flowers. This subject is so vast and so rich, that I hesitate not to affirm that it presents ample employment for the most famous Botanist in Europe, through his whole life, by discovering to him every day some new beauty, and that without removing above a league from his own habitation. All the art with which jewellers dispose their gems disappears before that which Nature displays in the assortment of flowers.

I shewed *J. J. Rousseau* the flowers of different trefoils which I had picked up, as I was walking with him : some of them were disposed in crowns, in half crowns, in ears, in sheaves with colours endlessly varied. While they were yet on their stems they had besides other aggregations, with the plants which were frequently opposed to them, in colours and in forms. I asked him whether Botanists gave themselves any trouble about those harmonies : he told me no ; but that he had advised a young Painter of Lyons to learn Botany, with a particular view to study in it's forms and the assemblages of flowers ; and that he had thus become one of the most celebrated pattern-drawers in Europe. On this subject I quoted to him a passage from *Pliny* with which he was highly delighted : it relates to a Painter of Sicyon, named *Pausias*, who learned by means of this study to paint flowers at least as well as he of Lyons knew

how to draw them ; he had in truth a master as skilful as Nature herself, or rather one and the same with her, namely Love.

I shall give this story in the simplicity of style of the old Translator of *Pliny*, in order to preserve all it's vivacity.* “ In his youth he became enamoured of a nosegay girl of the same city with himself ; her name was *Glycera* ; she was very pretty, and had a singularly elegant taste in assorting a thousand different ways the flowers of nosegays and chaplets : so that *Pausias*, copying after Nature the chaplets and nosegays of his mistress, rendered himself at length perfect in that art. Last of all, he painted her seated in the attitude of composing a chaplet of flowers ; and this picture is considered as his great master-piece : he called it *Stephano-Plocas*, the garland weaver, because *Glycera* had no other means of relieving the pressure of poverty, but making and selling garlands and nosegays. And it is confidently affirmed that *L. Lucullus* gave to *Dionysius* of Athens two talents, for a simple copy of this picture.”

This anecdote must have been singularly pleasing to *Pliny*, for he has repeated it in another place :† “ Those of *Peleponesus*,” says he, “ were the first who regulated the colours and smells of the flowers of which chaplets were composed. It was however originally the invention of *Pausias*, a Painter, and of a nosegay-girl named *Glycera* with whom he was violently in love ; whence he was engaged to imitate to the life the chaplets and nosegays which she composed. But the girl varied in so many ways the arrangement of the flowers of her chaplets, in order to teize and employ her lover, that it afforded very high amusement to behold the skill of the Painter *Pausias*, and the natural production of *Glycera*, striving for the superiority.”

Ancient Nature is still better acquainted with the subject than is the young *Glycera*. As it is impossible to follow her in her infinite variety, we shall make at least one observation respecting her regularity. It is this, that there is not any one odoriferous flower but what grows at the foot of Man, or at least within reach of his hand. All those of this description are

* *Pliny's Natural History*, book xxxv. chap 2.

† *Idem*, book xxi. chap. 2.

placed on herbage, or on shrubbery, as the heliotrope, the pink, the gilly-flower, the violet, the rose, the lilach. Nothing similar to these grows on the lofty trees of our forests; and if some flowers of brilliant appearance are displayed on certain tall trees of foreign countries, such as the tulip-tree, and the great chestnut of India, they have no very pleasant smell. Some trees of India, it is admitted, as the spice-bearing plants, are perfumed all over; but their flowers are not very showy, and do not partake of the odour of their leaves. The flowers of the cinnamon-tree smell like human excrement: this I know to be true by experience; if however the trees which were shewed to me in the Isle of France, in a plantation belonging to Mr. *Magon*, were the real cinnamon. The beautiful and fragrant flower of the magnolia grows on the lower part of the plant. Besides the laurel which bears it is, as well as spice-trees, a plant of no great elevation.

It is possible I may be mistaken* in some of my observations; but supposing them multiplied with respect to the same object, and attested by persons of veracity and exempted from the spirit of system, I am able to deduce general consequences from them which ought not to be a matter of indifference to the happiness of Mankind, by demonstrating to him the invariable intentions of benevolence in the AUTHOR of Nature. The varieties of their adaptation reflect mutual light; the means are different, but the end is constantly the same. The same goodness which has placed the fruit destined for the nourishment of Man within reach of his hand, must have likewise disposed his nose-

* You are, indeed, mistaken. And it would be an easy task to write a dissertation to expose the debility of your system in this part of the work. Yet even here you preserve your ingenuity, and proclaim your holy homage to the Creator. For this you can never be too much praised. How many vile-smelling flowers, spread themselves upon the carpet of the earth! How many grow upon vegetables not higher than ourselves! If it be true that the fragrant flowers of the magnolia grow on the lower part of the tree, it is also true that they grow at a considerable height above the ground, and often far beyond the reach of man. But in another species of magnolia, the umbrella-tree (*magnolia tripetala*), the flowers grow, in great numbers, within the reach of the hand: and the odour of these flowers is at once vile and oppressive. In the *Franklinia*, as we Americans call it (the *gordonia pubescens*) we have an odour much more delicate than that of the finest magnolia: but the flower of this noble American tree, or shrub, seems to prefer the higher and terminating branches.—B. S. B.

gay with similar attention to his conveniency. It may be here remarked, that our fruit-trees are easily scaled, and different in this respect from most forest-trees. Farther, all those which produce fruits that are soft when in a state of perfect maturity, and which would have been liable to be bruised in falling, such as the fig, the mulberry, the plumb, the peach, the apricot, present their crop at a small distance from the ground : those, on the contrary, which yield hard fruit, and such as have nothing to risk from falling far, carry it aloft, as walnut-trees, chesnuts, and cocoas.

There is no less marvelousness of adaptation in the forms and sizes of fruits. Many of them are moulded for the mouth of Man, such as cherries and plumbs ; others for his hand, such as pears and apples ; others much larger, such a melons, have the sub-divisions marked, and seem destined to be a social family repast : nay there are some in India, as the jacque, and with ourselves the pumpion, large enough to be divided among a neighbourhood. Nature appears to have observed the same proportions in the various sizes of the fruits destined to the nutriment of Man, as in the magnitude of the leaves which are designed to afford him a shade in hot countries ; for of these some are contrived to be a shelter for a single person, others for a whole family, and others for all the inhabitants of the same hamlet.

I shall not dwell long on the other relations which plants have with the habitation of Man, from their greatness and their attitude, though many very curious observations might be suggested on that subject. There are few of them but what are capable of embellishing his field, his roof, or his wall. I shall only remark that the vicinity of Man is beneficial to many plants. An anonymous missionary says it is firmly believed by the Indians, that the cocoa-trees which have houses around their roots become much more beautiful than those where there are none ; as if that useful tree took delight in being near the habitation of Man.

Another missionary, a bare-footed Carmelite, called Father *Philippe*, positively asserts that when the cocoa-tree is planted close by houses or huts, it is rendered more fruitful by the smoke, by the ashes, and by other circumstances connected with a human dwelling, so as to produce double the quantity of fruit.

He adds that, for this reason, the places in India which consist of palm-plantations are crowded with houses and little cabins; and that the proprietors of those plantations give, at first, a pecuniary premium as an inducement to come and live there, together with part of the crop when it is reaped. He farther adds, that though their fruits, which are very large and hard, frequently fall down from the trees when they have attained a state of full maturity, either by the gnawing of the rats, or by the violence of the winds, there is not a single instance known of any person's being hurt by the fall. This appears to me no less extraordinary than it did to him.*

I might extend the influences of Man to several of our fruit-trees, especially to the apple-tree and the vine. I never saw finer apple-trees in the Pais de Caux, than those which grow around the habitations of the peasantry. It is true that the attention of the proprietor may have greatly contributed to this. I have sometimes felt myself stopped in the streets of Paris, to contemplate with delight small vines, the roots of which are in the sand, and under the pavement, enriching with their clusters the complete front of a guard-house. One of them, I think about six or seven years ago, produced two crops in one year, as was announced in the public prints.

Animal Harmonies of Plants with Man.

But Nature was not satisfied with having given to Man a bower, and a carpet, loaded with fruit: this would not have thoroughly availed him, had she not likewise furnished him, in the vegetable order itself, with the means of defence against the depredations of wild beasts. In vain would he have watched over the preservation of his property through the day, had it been exposed to pillage during the night. She has bestowed a prickly shrubbery to enclose him round and round. The farther we advance southward we find the greater variety in the species of these. But on the contrary we see few, if any, of those thorny shrubs in the North, where they appear useless, there being no orchards to defend. They seem to be produced in both Indies for every kind of situation. Though I have been

* See Voyage to the East, of *R. P. Philippe*, a white friar. Book vii. chap. chap. 5, sect. 4.

only on the selvage, as I may say, of those countries, I have seen there a great number of such shrubs, the study of which presented a great variety of curious remarks to a Naturalist.

Among others, I took particular notice of one in a garden of the Isle of France, which to me appeared proper for composing a fence impenetrable to the smallest of quadrupeds. It rises in form of a stake about the thickness of a man's arm, quite straight, without branches, and bearing no verdure except a small bunch of leaves on it's summit. It's bark is bristled all over with very strong and very sharp prickles. It attains the height of seven or eight feet, and grows as thick above as below. A series of these shrubs, planted close to each other, would form a real palisado, without the smallest interval. The opuntia and the taper, so common under the Torrid Zone, are armed with prickles so keen that they pierce the soles of your shoes if you venture to walk over them. There is not a tiger, or lion, or elephant, that dares to approach them. There is another species of thorn in the Island of Ceylon, which is employed as a defence against Man himself, accustomed as he is to force his way through every obstacle. *Robert Knox* whom I have before quoted, informs us, that the avenues of the kingdom of Candy in the Island of Ceylon, are blockaded only with faggots of those thorns, with which the inhabitants obstruct the passes of their mountains.

Man finds in vegetables protection not only against ferocious animals, but against reptiles and insects. *Father du Tertre* tells us that he one day found, in the Island of Guadaloupe, at the foot of a tree, a creeping plant, the stem of which presented the figure of a serpent. But he was much more surprised on perceiving seven or eight snakes lying dead around it. He communicated this discovery to a medical man, who by means of it performed many wonderful cures, by employing it in the cases of persons bitten by those dangerous reptiles. It is generally diffused over the rest of the Antilles Islands, in which it is known by the name of snake-wood. It is likewise found in the East-Indies. *John Hugo de Linschoten* ascribes to it the same figure and the same qualities.

We have in our own climates vegetables which present very strange correspondencies and contrasts with reptiles. *Pliny* tells us that serpents are very fond of the juniper and of the fennel,

but that they are rarely found under the fern, the trefoil, the ash-weed, and the rue ; and that betony kills them. Other plants, as has already been mentioned, destroy flies, such as certain species of the *dionæa*. *Thevenot* assures us that in the Indies grooms defend their horses from the flies, by rubbing them every morning with the flowers of the pumpkin. The flea-bane, which bears black and shining grains resembling a flea, clears the house of that vermin, if *Dioscorides* is to be credited. The echium, which has it's seed formed like the head of a viper, is fatal to those reptiles. It is probable that from such configurations men, in the earlier ages of the World, discovered the relations and the oppositions between plants and animals. I am disposed to believe that each genus of insect has it's destructive vegetable with which we are unacquainted. In general, all vermin shuns perfume.

Nature has farther given us, in plants, the first patterns of nets for hunting and fishing. There grows on certain heaths in China a species of ratan so interwoven and so strong, as to catch and hold fast the stag, though in full vigour. I myself have seen on the sands of the sea-shore in the Isle of France a species of lianne, called the false-potatoe, which covers whole acres like a vast fishing-net. It is so perfectly adapted to this very purpose that the Negroes actually employ it in fishing. They form with the stems and foliage of it a very long series of cordages, which they cast into the sea ; and having disposed them in a chain encompassing a great space on the water, they draw it ashore by the two extremities. They scarcely ever fail to bring out fish,* for the fishes are terrified not only by a net which incloses them, but by every unknown substance which forms a shade on the surface of the water. By employing an industry equally simple, and nearly similar, the inhabitants of the Maldivia Islands carry on fisheries to a prodigious extent. employing no other means to decoy the fish into their receptacles, except a cord floating on the water with the help of sticks.

Human, or elementary, Harmonies of Plants.

There is not a single plant on the face of the Earth but what has certain relations to the necessities of Man, and which does

* See *Francis Pyrard's Voyage to the Maldivias.*

not serve, somewhere or another, for clothing to him, for a shelter, for pleasure, for medicine, or at least for fuel. Some which with us are entirely useless are in high estimation in other parts of the World. The Egyptians put up frequent and fervent prayers for a plentiful crop of nettles, from the seeds of which they extract an oil, while the stem furnishes them with a thread which they weave into excellent cloth. But those general relations, being innumerable, I shall confine myself to a few particular observations respecting the plants which minister to the first of human wants, I mean the food of Man.

We remark, first, that corn, which serves for the general subsistence of the Human Race, is not produced by vegetables of a lofty stature, but by simple grasses. The principal support of human life is borne on herbage, and is exposed to the mercy of every breath of wind. There is reason to believe that had we ourselves been entrusted with the safety of our crops, we should not have failed to place them on great trees ; but in this, as well as in every thing else, we are bound to admire Divine Providence, and to mistrust our own wisdom. Had our harvests been the produce of the forests, in the event of these being destroyed by war, or set on fire through our own imprudence, or rooted up by the winds, or ravaged by inundations, whole ages would have been requisite to re-produce them in a country. Farther, the fruits of trees are much more liable to drop off than the seeds of grasses. The grasses, as has been already observed, carry their flowers in an ear, in many cases surmounted by little beards, which do not defend their seeds from the birds, as *Cicero* says, but which serve as so many little roofs to shelter them from the water which falls from Heaven. The drops of the rain cannot drown them, as they do flowers radiated, in disks, in roses, and in umbels, the forms of which however are adapted to certain places and to certain seasons ; but those of the grasses are adapted to every exposure.

When they are borne in flowing and drooping plumes, such as those of most grasses of hot countries, they are sheltered from the heat of the Sun ; and when collected into an ear, as those of most grasses of cold countries, they reflect his rays on at least one side. Farther, by the suppleness of their stems, strengthened by joints from distance to distance, and by their aliform and capillaceous leaves, they escape the violence of the

winds. Their weakness avails them more than strength does the great trees. Like small fortunes, they are re-sown and multiplied by the very same tempests which lay waste the vast forests.

They farther resist the effect of excessive dryness by the length of their roots, which go in quest of moisture a great way under ground ; and though their leaves are narrow, they have them in such numbers, that they cover the face of the ground with plants endlessly multiplied. At the slightest shower you see them all rear themselves into the air, at their extremities, as if they were so many claws. They even resist conflagration, which consumes so many trees in the forest. I have seen countries in which they every year set the herbage on fire in the season of the drought, recover themselves as soon as it rained with the most lovely verdure. Though this fire be so active as frequently to devour, root and branch, the trees which come into contact with it, the roots of herbage sustain no great injury.

They have moreover the faculty of re-producing themselves in three different ways, by shoots which push away from their roots, by creeping branches, which they extend to a distance, and by grains extremely volatile or indigestible, which the winds and the animals scatter about on every side. The greatest part of trees, on the contrary, naturally regenerate themselves only by their seeds. Add to the general advantages of grasses, an astonishing variety of characters in their florification and in their attitudes, which renders them more proper than vegetables of every other class, to grow in every variety of situation.

It is in this cosmopolite family, if I may be allowed the expression, that Nature has placed the principal aliment of Man ; for the various species of corns, on which so many human tribes subsist, are only so many species of grasses. There is no land on the Globe where some kind of corn or another may not be raised. *Homer*, who had studied Nature so accurately, frequently characterizes each country by the vegetable peculiar to it. One island he celebrates for it's grapes, another for it's olive-trees, a third for it's laurels, and a fourth for it's palms ; but to the Earth only he gives the general epithet of *Ζειδωρα*, or corn-giving. Nature in fact has formed it for growing in all situations, from the Line to the very border of the Frozen Ocean. One species is adapted to the humid places of warm

countries, as the rice of Asia, which grows in vast abundance in the muddy swamps by the side of the Ganges. Another is suited to the marshy grounds of cold countries ; such is a kind of false oats which naturally grows on the banks of the rivers of North-America, and of which many savage Nations annually raise immense crops.*

Other kinds of corn thrive wonderfully well on warm and dry lands, as the millet and the pannic of Africa, and the maize of Brasil. In our climates wheat agrees best with a strong soil, rye with a sandy one, buck-wheat with rainy declivities, oats with humid plains, barley with stony ground. Barley succeeds in the very bosom of the North. I have seen as far up as the sixty-first degree of North-Latitude, amidst the rocks of Finland, crops of this grain as beautiful as ever the plains of Palestine produced.

Corn affords an abundant supply to all the necessities of Man. With it's straw he enjoys the means of lodging, of covering, of warming himself, and of feeding his sheep, his cow, and his horse ; with it's grain he can compound aliments and liquors of every flavour. The northern Nations brew it into beer, and distil from it strong waters more potent than those from wine ; such are the distillations of Dantzick. The Chinese† extract from rice a wine as agreeable as the best wines of Spain. The Brasilians prepare their *ouicou* with maize. In a word, with oats torrified it is possible to compose a cream which shall have the perfume of the vanilla. If we unite with these qualities those of the other domestic plants, most of which likewise grow all over the Earth, we shall find in them the savour of the clove, of pepper, of other spiceries ; and without going farther than our own gardens, we shall be able to collect the delicacies scattered over the rest of the vegetable Creation.

We may distinguish in the barley and the oats, the elementary characters which have been formerly indicated, and which vary the species of plants of the same genus in a conformity to the situations where they are designed to grow. The barley destined to dry places has leaves broad and open at their base,

* Consult Father *Hennepin*, a Franciscan : *Champlain*, and other Travellers through North-America.

† Journey to China, by *Isleard Idzi*

which convey the rain-water to the root of the plant. The long beards which surmount the coat that is wrapped round the grain, are bristled with denticulations, very much adapted to the purpose of making them adhere to the hair of animals, and of resowing them in lofty and dry situations. The oats, on the contrary, destined to humid places, have narrow leaves, gathered close around the stem, in order to intercept the rain-water. The coats of this plant distended, similar to two long half-bladders, and not very closely adhering to the grain, render it proper for floating, and for crossing the water by the help of the winds. But here we are presented with a still more wonderful fact, which will confirm what has been advanced respecting the uses of the different parts of plants relatively to the elements, and which extends the views of Nature even beyond the fructification, though we have considered this as the determining character; it is that barley, in rainy years, degenerates into oats, and that oats, in dry seasons, change into barley.

This observation, related by *Pliny*, *Galen*, and *Mathiola*, the Commentator of *Dioscorides*,* has been confirmed by the experiments of several modern Naturalists. *Mathiola* indeed alleges that this transformation of barley is not into oats properly so called, which he denominates *Bromos*, but into a plant which at first sight resembles it, and to which he gives the name of *Ægilops*. This transformation, demonstrated by the frequently repeated experiments of the husbandmen of his country, and by that which the father of *Galen* made expressly for his own satisfaction; together with that of the flowers of the linarium, and of the leaves of many vegetables, are sufficient proof that the elementary relations of plants are only secondary, and that animal or human relations are the primary. Thus Nature has placed the character of a plant not only in the form of the fruit, but in the substance of that very fruit.

Hence I presume, that having formed in general of a mealy substance the basis of human life, Nature has diffused it over all situations, on different species of grasses; that afterwards, intending to add to this certain modifications relative to some humours of the human temperament, or to some influence of season or of climate, she has formed other combinations of it,

* See *Mathiola* on *Dioscorides*, book iv. page 462.

which she has deposited in leguminous plants, such as pease and beans, which the Romans comprehended in the class of corn-plants; that finally she has formed another sort of it, which she has laid up in the fruits of trees, such as chesnuts, or in roots, as potatoes, and other farinaceous under-ground vegetables.

Those adaptations of substance to every climate are so infallibly certain, that in every country the fruit most common there is the best and most wholesome. Hence I farther presume that she has followed the same plan with respect to medicinal plants; and that having diffused over various families of vegetables, virtues relative to our blood, to our nerves, to our humors, she has modified them in every Country conformably to the diseases which the climate of each particular country generates, and has placed them in opposition with the particular characters of those same diseases. It is in my opinion from the neglect of these observations, that so many doubts and disputes have been excited respecting the virtues of plants. A simple, which in one country is an infallible cure for a malady, may sometimes increase it in another. The Jesuits-powder, which is the pounded bark of a species of fresh-water manglier of Mexico, is a remedy for the fevers of America, of a kind peculiar to damp and hot situations, but frequently fails when applied to those of Europe. Every medicine is modified according to the place, just as every malady is.

I shall pursue this reflection no farther, as it would lead me into a deviation from my subject; but if Physicians would pay the attention to it which it merits, they must study more carefully the plants of their own country, and not prefer to them as they generally do, those of foreign climates, which they are under the necessity of modifying a thousand different ways, in order to give them, as chance may direct, an adaptation to local maladies. One thing is certain, namely, that when Nature has determined a certain savour in any vegetable, she repeats it all over the Earth with a variety of modifications, which do not however prevent our distinguishing it's principal virtue. Thus having placed the *cochlearia* (scurvy-grass), that powerful antiscorbutic, even on the foggy shores of Spitzbergen, she has repeated the savour and the medicinal qualities of it, in the cresses of our brooks, in the garden cresses, in the nasturtium, which is

a cress of the rivers of Peru ; in a word, in the very grains of the papaya, which grows in humid places of the Antilles Islands. We find in like manner the savour, the smell, and the medicinal qualities of our garlic, in the woods, the barks, and the mosses of America.*

* I must here observe that garlic, the smell of which is so formidable to our fine ladies, is perhaps the most infallible remedy in the World against the vapours, and all the nervous disorders to which women are subject. Of this I have had repeated experience. Nay *Pliny* goes so far as to assure us that it is a cure for the epilepsy. It is besides an antiseptic ; and every plant which has it's smell has also the same virtues. It is very remarkable that plants which smell like garlic, usually grow in marshy places, as a remedy provided by Nature against the putrid emanations thence exhaled. Such is, among others, the *scordium*. *Galen* relates, that it's antiseptic virtue became demonstrable from this, that after a battle, the dead bodies which happened to be in contact with plants of the *scordium*, were found to be in a much less putrid state than those which were not ; and that those bodies remained fresh and sound chiefly in the parts which actually touched the plant. But the experiment which the Baron *Busbequius* made with it upon living bodies, is still more striking. That great Man, on his return from the first Journey which he made to Constantinople, was attended by a numerous retinue. A Turk of his suit was attacked with the plague, and died. His companions resolutely divided his spoils among themselves, in defiance of the remonstrances of the Physician of *Busbequius*, who assured them that the pestilence would thereby be immediately communicated. In fact, a few days after, the symptoms of that dreadful malady became apparent among them.

But let us permit the intelligent and virtuous Ambassador himself to give an account of the consequences of this alarming event. "The day after our departure for Adrianople," says he, "they all came to him (the Physician) with a sad and dejected air, complaining of a violent head-ach, and imploring relief. They were perfectly sensible that they were affected with the first symptoms of the pestilence. My physician reprimanded them severely, saying he was astonished how they dared to apply to him for a remedy for an evil of which he had forewarned them, and which they had obstinately persisted in bringing upon themselves. Not however that he intended to withhold any assistance which might be in his power. On the contrary, he became extremely uneasy about the means of relieving them : But where was the possibility of finding medicine on a road frequently subject to a failure of the most common necessities of life ? Providence became our only refuge, and we were effectually succoured in this trying hour. I shall relate in what manner.

"It was my custom, on our arrival at the different halting places on the road, to go a walking in the vicinity, and to take a view of every thing curious. That day I was so fortunate as to bend my course to an adjacent meadow. My eye happened to catch sight of a plant with which I was unacquainted : I picked up some of it's leaves, and put them to my nose : they smelled of garlic. I handed them to my Physician, asking him if he knew

These considerations induce me to believe that the elementary characters of plants, and their entire configuration, are only secondary means, and that their principal character is referable to the necessities of Man. Thus, in order to establish in plants an order simple and agreeable, instead of running over successively their elementary, vegetable, animal, and human harmonies, it would be more proper to invert this order, but without changing it, and to set out with the plants which present to Man a supply for his first wants, to proceed thence to the use which animals derive from them, and to conclude with the situations which determine their varieties.

This order may be followed so much the more easily, that the first point of departure is fixed by the smell and the taste. The testimony of these two senses is far from being contemptible; for they assist us in ascertaining the intimate qualities of plants, much better than the decompositions of Chemistry; it may be extended to the whole vegetable kingdom, inasmuch as there is not a single genus of plants, varied into umbelliferous, rose-formed, papilionaceous, and the rest, but what presents food to Man in some part or another of the Globe. The ciperus of Ethiopia bears at it's root bulbs which have the taste of almonds. That which in Italy is called *Trasi* produces bulbs which taste like chesnuts.* We have found in America the potatoe in the class of *solana*, which are poisons. It is a jasmine of Arabia which supplies us with the coffee-berry. The eglantine with us produces berries fit only for the use of birds; but that of the land of Yesso, which grows there among rocks and the shells on

" the plant. After having attentively examined it, he replied that it was the
 " scordium. He lifted up his hands to Heaven, and gave thanks to God for
 " the seasonable relief which He had sent us. He instantly gathered a con-
 " siderable quantity, put it into a large kettle, and boiled it thoroughly. Then,
 " calling for the patients, desired them to take courage, and without the
 " loss of a moment made them drink copiously of the decoction of that plant,
 " with a slight infusion of the earth of Lemnos: he then had them well warm-
 " ed and put to bed, desiring them not to go to sleep till they had fallen into
 " a profuse perspiration, with which they exactly complied. The next day
 " they felt themselves greatly relieved. A similar dose was repeated, and
 " the whole ended in a perfect cure. Thus through the goodness of God
 " we escaped a death which stared us immediately in the face." (Letters
 of the Baron *Busbequius*, vol. I. pages 197 and 198.)

* See the Catalogue of Garden-Plants of Bologna, by *Hyacinth Ambrosius*,

the sea-shore, bears cups so large and so nourishing, that they serve for food to the inhabitants of those shores for a considerable part of the year.* The ferns of our hills are unproductive; but there grows in North-America a species of this plant, called *Filix baccifera*, loaded with berries which are very good to eat.† The tree itself of the Molucca Islands, called *Libbi* by the inhabitants and palm-sago by travellers, is in the judgment of our Botanists merely a fern. This fern contains in it's trunk the sago, a substance lighter and more delicate than rice. In a word, there are even certain species of sea weed which the Chinese eat with delight, among others those which compose the nests of a species of swallow.

By disposing in this order therefore the plants which produce the principal subsistence of Man, as the grasses, we should have, first for our own country, the wheat of strong lands, the rye of the sands, the barley of the rocks, the oats of humid places, the buck-wheat of rainy declivities; and for other climates and exposures, the pannic, the millet, the maize, the Canadian oats, the rice of Asia, some species of which thrive in dry situations; and so of the rest.

It would be farther useful to ascertain on the Globe the places to which the several origin of each alimentary plant might be referred. What I have to advance on this subject may be conjecture merely, but it appears to me to have an air of probability. I am of opinion then, that Nature has placed in islands the species of plants which are most beautiful, and best adapted to the necessities of Man. First, islands are more favourable to the elementary expansions of plants than the interior of continents, for there is no one but what enjoys the influences of all the elements, being completely surrounded by the winds and the seas, and frequently in it's interior possessing the combined advantages of plains, of sands, of lakes, of rocks and of mountains. An island is a little world in epitome. Secondly, their particular temperature is so varied, that you find some of them in all the principal points of Longitude and Latitude, though there be a considerable number still unknown to us, particularly in the South Seas. Finally, experience demonstrates that there is not

* Consult Collection of Voyages by *Thévenot*

† See Father *Charlevoix*, his History of New France

a single fruit-tree in Europe but what becomes more beautiful in some of the islands along the coast, than in the Continent.

I have spoken of the beauty of the chesnut-trees of Corsica and Sicily : but *Pliny*, who has preserved to us the origin of the fruit-trees which were in Italy in his time, informs us that most of them had been imported from the islands of the Archipelago. The walnut came from Sardinia ; the vine, the fig-tree, the olive, and many other fruit-trees, were natives of the other islands of the Mediterranean. *Nay* he observes that the olive-tree, as well as several other plants, thrive only in the vicinity of the Sea. All modern travellers confirm these observations. *Tavernier*, who had so many times traversed the Asiatic Continent, assures us that no olive-trees are to be seen beyond Aleppo. An anonymous English traveller, whom I have already quoted with approbation, positively asserts that no where on the Continent are there to be found fig-trees, once to be compared, either as to magnitude or fertility, with those of the Archipelago, notwithstanding the carelessness and indolence of the wretched possessors. To these I might add a great many other vegetables, which thrive only in those islands, and which furnish to the commerce of Europe, gums, mannas, and dye-stuffs. The apple-tree, so common in France, produces no where such fine fruit, and of species so varied, as on the shores of Normandy, under the breath of the sea-breeze from the West. I have no doubt that the fruit which was proposed as the prize of beauty had, like *Venus* herself, some favourite isle.

If we carry our remarks even into the Torrid Zone, we shall find that it is neither from Asia nor from Africa that we obtain the clove, the nutmeg, the cinnamon, the pepper of the best quality, the benzoin, the sandal-wood, the sago, and many others, but from the Molucco Islands, or from those which are in the same seas. The cocoa-tree attains it's perfect beauty only in the Maldivia Islands. Nay there are in the archipelagos of those Seas a great number of fruit-trees described by *Dampier* which have not yet been transplanted into the Old Continent ; such as the grape-tree. The double cocoa is to be found only in the Sechelles Islands. The islands recently discovered in the South-Sea, such as that of Otaheité, have presented us with trees hitherto unknown, as the bread-fruit and the mulberry-tree, the bark of which serves to make cloth. As much may be said

of the vegetable productions of the Islands of America relatively to their Continent.

These observations might be extended even to the very birds and quadrupeds, which are more beautiful, and of species more varied in islands than any where else. The elephants held in highest estimation in Asia are those of the Island of Ceylon. The Indians believe them to be possessed of something divine; nay more, they allege that other elephants acknowledge this superiority. One thing is certain, they fetch a higher price all over Asia than any others. In a word, travellers the most worthy of credit, and who have made the most accurate observations, as the English *Dampier*, *Father du Tertre*, and some others, assure us, that there is not a shallow in the seas lying between the Tropics but what is distinguished by some sort of bird, of crab, of turtle, or of fish, which is no where else to be found, either of species so varied, or in so great abundance. I presume that Nature has thus scattered her choicest benefits over the islands, in order to allure men thither, and to pervade the Earth. These are only conjectures I grant, but they rarely deceive us when they are founded on the wisdom and goodness of the AUTHOR of Nature.

The finest species of corn, therefore, which is wheat, might be referred to Sicily, where in fact they pretend it was originally found. Fable has immortalized this discovery, by making that island the scene of the amours of *Ceres*; as well as the birth of *Bacchus*, in the Isle of Naxos, because of the beauty of its vines. This much is certain, that corn is no where indigenous but in Sicily, if however it still re-perpetuates itself there spontaneously, as the Ancients affirm.*

After having determined in the same manner the other human accommodations of the grasses to different situations of ground, we might examine the grasses which exhibit marked relations to our domestic animals, such as the ox, the horse, the sheep, the dog. We might characterize them by the name of these animals. We should have the *gramen bovinum, equinum,*

* The native or original country of the wheat, or corn, is not known. It is not probable that it was indigenous in Sicily. It is much more probable that its native country is some part of Hindustan, or Persia. The spelt, which is a species of wheat, is, unquestionably, indigenous in Persia, where it is still found wild in some of the delightful vallies of that country.—B. S. B.

ovinum, caninum. The different species of each of these genera might afterwards be distinguished by the names of the different places where they are found by the several animals; on the banks of rivers, among rocks, on sands, on mountains; so that by the addition of the epithets, *fluviatile, saxatile, arenosum, montanum*, you might supply in two words, all the verbose phraseology of our botanical compositions.

We might apportion, in like manner, the other grasses to the different quadrupeds of our forests, as to the stag, to the hare, to the wild boar, and so on. These first determinations would require certain experiments to be made on the tastes of animals, but they would be very instructive, and highly amusing. They would have no mixture of cruelty, as most of those of our modern physics have, by which the wretched animal is flayed alive, poisoned, or suffocated, in order to come at the knowledge of it's propensities. Our experiments would study their appetites only, and not their convulsions. Besides, there are a great many of those preferred and rejected plants already well known to our shepherds. One of them shewed me, in the vicinity of Paris, a gramineous plant which fattens sheep more in a fortnight than the other species can do in two months. The moment too that the animals perceive it, they run after it with the utmost avidity. Of this I have been an eye-witness, I do not mean however to assert that each species of animal limits it's appetite to a single species of food. It is quite sufficient, in order to establish the order which I am proposing, that each of them gives, in every genus of plant, a decided preference to some one species; and this is confirmed beyond all doubt by experience.

The great class of the gramineous plants being thus apportioned to Man and animals, other plants would present still greater facility in their appropriations, because they are much less numerous. Of the fifteen hundred and fifty species of plants, enumerated by *Sebastian le Vaillant* in the country adjacent to Paris, there are more than a hundred families, among which that of the grasses comprehends, for it's share, eighty-five species, exclusive of twenty-six varieties, and our different sorts of corns. It is the most numerous next to that of mushrooms, which contains a hundred and ten species, and that of mosses, which contains eighty-six. Thus, instead of the systematic clas-

sification of botanic Writers, which gives no explanation of the uses of most of the vegetable parts, which frequently confounds plants the most heterogeneous, and separates those of the same genus, we should have an order simple, easy, agreeable, and of an infinite extent, which passing from Man to animals, to vegetables and to the elements, would discover to us the plants which serve to our use and to that of other sensible beings, would render to each of them it's elementary relations, to each site on the Earth it's vegetable beauty, and would replenish the heart of Man with admiration and gratitude. This plan appears so much the more conformable to that of Nature, that it is entirely comprehended in the benediction which it's AUTHOR pronounced upon our first parents, saying unto them :* “ Behold, I have
 “ given unto you every herb bearing seed, which is upon the
 “ face of all the Earth, and every tree, in the which is the fruit
 “ of a tree yielding seed, *after it's kind*: to you it shall be for
 “ meat: and to every beast of the Earth, and to every fowl of
 “ the air, and to every creeping thing that creepeth upon the
 “ Earth, wherein there is life, I have given every green herb
 “ for meat.”

This benediction is not confined, as far as Man is concerned to some primordial species in each genus. It is extended to the whole vegetable kingdom, which converts itself into aliment fit for his use by means of the domestic animals. *Linnaeus* has presented to them from eight to nine hundred plants which Sweden produces, and he remarked that of these, the cow eats two hundred and eighty six; the goat four hundred and fifty eight; the sheep four hundred and seventeen; the horse two hundred and seventy-eight: the hog one hundred and seven. The first animal refuses only one hundred and eighty-four of them; the second ninety-two; the third one hundred and twelve; the fourth two hundred and seven; the fifth one hundred and ninety. In these enumerations he comprehends only the plants which those animals eat with avidity, and those which they obstinately reject. The others are indifferent to them. They eat them when necessity requires, and even with pleasure, when they are tender. Not one of them goes to waste. Those which are rejected by some are a high delice to others. The most acrid and

* Genesis, chap. i. ver. 29, 30

even the most venomous, serve to fatten one or another. The goat browses on the ranunculus of the meadow, though hot as pepper, on the tithymal and the hemlock. The hog devours the horsetail and henbane. He did not put the ass to this kind of proof, for that animal does not live in Sweden, nor the reindeer, which supplies the want of him to so much advantage in northern regions, nor the other domestic animals, such as the duck, the goose, the hen, the pigeon, the cat, and the dog.

All these animals united, seem destined to convert to our advantage every thing that vegetates, by means of their universal appetites, and especially by that inexplicable instinct of domesticity which attaches them to Man ; whereas no art can communicate it either to that timid animal the deer, nor even to some of the smaller birds, which seek to live under our protection, such as the swallow, who builds her nest in our houses. Nature has bestowed this instinct of sociability with Man only on those whose services might be useful to him at all seasons ; and she has given them a configuration wonderfully adapted to the different aspects of the vegetable kingdom.

I say nothing of the camel of the Arabian, which can travel under a load for several days together without drinking, in traversing the burning sands of Zara ; nor of the reindeer of the Laplander, whose deeply-cleft hoof can fasten, and run along on the surface of the snow ; nor of the rhinoceros of the Siamese and of the Peguan, who with the folds of his skin, which he can distend at pleasure, is able to disengage himself out of the marshy grounds of Siriam ; nor of the Asiatic elephant whose foot divided into five ergots is so sure on the steep mountains of the Torrid Zone ; nor of the lama of Peru, who with his forked feet scrambles over the rocky heights of the Cordeliers. Every extraordinary situation is maintaining for Man a useful and commodious servant.

But without removing from our own hamlets, the single-hoofed horse pastures in the plains, the ponderous cow in the bottom of the valley, the bounding sheep on the declivity of the hill, the scrambling goat on the sides of the rocks ; the hog, furnished with a proboscis, rakes up the morass from the bottom ; the goose and the duck feed on the fluviatic plants ; the hen picks up every grain that was scattered about and in danger of being lost in the field ; the four-winged bee collects a tribute

from the small dust of the flowers ; and the rapid pigeon hastens to save from loss the grains which the winds had conveyed to inaccessible rocks. All these animals, after having occupied through the day the various sites of vegetation, return in the evening to the habitation of Man, with bleatings, with murmurings, with cries of joy, bringing back to him the delicious produce of the vegetable creation, transformed by a process altogether inconceivable, into honey, into milk, into butter, into eggs, and into cream.

I take delight in representing to myself those early ages of the World when men travelled over the face of the Earth, attended by their flocks and herds, laying the whole vegetable kingdom under contribution. The Sun going before them in the Spring invited them to advance to the farthest extremities of the North, and to return with Autumn bringing up his train. His annual course in the Heavens seems to be regulated by the progress of Man over the Earth. While the Orb of day is advancing from the Tropic of Capricorn to that of Cancer, a traveller departing on foot from the Torrid Zone may arrive on the shores of the Frozen Ocean, and return thence into the Temperate Zone when the sun traces backward his progress, at the rate of only four, or at most five leagues a day, without being incommoded the whole journey through with either the sultry heat of Summer, or the frost of Winter. It is by regulating themselves according to the annual course of the Sun that certain Tartar-hordes still travel.

What a spectacle must the virgin Earth have presented to it's first inhabitants, while every thing was as yet in it's place, and Nature not yet degraded by the injudicious labours or the desperate madness of Man ! I suppose them taking their departure from the banks of the Indus, that land which is the cradle of the Human Race, on a progress northward. They first crossed the lofty mountains of Bember, continually covered with snow, which like a rampart encompass the happy land of Cachemire, and separate it from the burning kingdom of Lahor.* They presented themselves to their eyes like vast amphitheatres of verdure, clothed to the South with all the vegetables of India, and to the North with all those of Europe. They de-

* Consult *Bernier's Description of the Mogul Country*

scended into the vast bason which contains them, and there they beheld a part of the fruit-trees which were destined one day to enrich our orchards. The apricots of Media, and the peach-trees of Persia skirted, with their blossoming boughs, the lakes, and the brooks of living water which bedew their roots. On leaving the ever-green valleys of Cachemire, they quickly penetrated into the forests of Europe, and went to repose under the foliage of the stately beech and tufted elm, which had as yet shaded only the loves of the feathered race, and which no Poet had hitherto sung. They crossed the boundless meadows which are washed by the Irtis, resembling Oceans of verdure, here and there diversified with long beds of yellow lilies, with stripes of ginzeng, and tufts of broad-leaved rhubarb. Following the track of it's current, they plunged into the forests of the North, under the majestic branches of the fir, and the moving foliage of the birch.

What smiling valleys opened to their view along the river's-side, and invited them to deviate from the road, by promising them objects still more lovely ! What hills enamelled with unknown flowers, and crowned with ancient and venerable trees, endeavoured to persuade them to proceed no farther ! Arrived on the shores of the Icy Sea a new order of things arose to view. There was now no more night. The Sun encompassed the Horizon round and round ; and the mists, dispersed through the air, repeated on different planes the lustre of his rays in rainbows of purple, and parhelions of dazzling radiance. But if the magnificence of the Heavens was multiplied, desolation covered the face of the Earth. The Ocean was hoary with mountains of floating ice, which appeared in the Horizon like towers and cities in ruin ; and on the land nothing was to be seen in place of groves, but a wretched shrubbery blasted by the winds, and instead of verdant meads, rocks clothed with moss. The flocks which had accompanied them must there undoubtedly have perished ; but even there Nature had still made provision for the necessities of Man. Those shores were composed of massy beds of coal.* The seas swarmed with fishes, and the lakes with fowls. They must find among the animal tribes servants and assistants : the rein-deer appeared in the

* Professor *Gmelin's* Journey Siberia.

middle of the mosses : she presented to those wandering families the services of the horse in her agility, the fleece of the sheep in her fur ; and shewing them, like the cow, her four teats, and but one nursling, she seemed to tell them that she was destined like her to share her milk with mothers oppressed by a too numerous offspring.

But the East must have been the part of the Globe which first attracted the attention of Mankind. That place of the Horizon where the Sun arises undoubtedly fixed their wondering eyes, at a period when no system had interposed to regulate opinion. On seeing that great Luminary arising from day to day, in the same quarter of the Heavens, they must have been persuaded that he there had a fixed habitation, and that he had another where he set, as a place of rest. Such imaginations confirmed by the testimony of their eyes, were, it must be admitted, natural to men destitute of experience, who had attempted to erect a tower which should reach to Heaven, and who even in the illumination of more scientific ages believed, as a point of religion, that the Sun was drawn about in a chariot by horses, and retired every evening to repose in the arms of *The-tis*. I presume they would be determined to go in quest of him rather toward the East than toward the West, under the persuasion that they would greatly abridge their labour by advancing to meet him.

It must have been this conviction, I am disposed to think, which left the West, for a long time, in a deserted state, under the very same Latitudes which in the East were swarming with inhabitants, and which first sent men in crowds toward the eastern part of our Continent, where the earliest and most populous Empire of the World, that of China, was formed. What confirms me farther in the belief that the first men who advanced toward the East were engaged in this research, and were in haste to reach their object, is this, that having taken their departure from India, the cradle of the Human Race, like the founders of other Nations, they did not like them people the Earth progressively, as Persia, Greece, Italy, and Gaul were successively, in a westerly direction ; but leaving desert the vast and fertile countries of Siam, of CochinChina, and of Tonquin, which are to this day half barbarous and uninhabited, they never gave up the pursuit till they were stopped by the Eastern

Ocean ; and they gave to the islands which they perceived at a distance, and on which they did not for a long time acquire the skill to land, the name of *Gepuen*, which we have transformed into Japan, and which in the Chinese language signifies birth of the Sun.

Father *Kircher** assures us, that when the first Jesuit Astronomers arrived in China, and there reformed the Calendar, the Chinese believed the Sun and the Moon to be no bigger than they appear to the eye ; that on setting they retired to a deep cave, from which they issued next day at the time of rising ; and, finally, that the Earth was a plane and smooth surface. *Tacitus*, who has written History with such profound judgment, does not deem it to be beneath him, in that of Germany, to relate the traditions of the western Nations, who affirmed that toward the North-west was the place where the Sun went to bed, and that they could hear the noise which he made on plunging into the waves.

It was from the quarter of the East, then, that the Orb of Day first attracted the curiosity of Mankind. There were likewise tribes which directed their course toward that point of the Globe, taking their departure from the southern part of India. These advanced along the peninsula of Malacca ; and familiarized with the Sea, which they coasted most of the way, they were induced to form the resolution of availing themselves of the united accommodation which the two elements present to travellers, by navigating from island to island. They thus pervaded that vast belt of islands, which Nature has thrown into the Torrid Zone, like a bridge intersected by canals, in order to facilitate the communication of the two Worlds. When retarded by tempests or contrary winds, they drew their barks ashore, cast a few seeds into the ground, reaped the crop, and deferred their re-embarkation till fairer weather, and a season more favourable, encouraged them to venture to sea again.

Thus it was that the early mariners performed their voyages, and that the Phenicians, employed by *Necho*, King of Egypt, made the circuit of Africa in three years, departing by way of the Red-Sea, and returning by the Mediterranean, according to the account given of it by *Herodotus*. †

* See China Illustrated, chap. ix

† Herodotus, book iv

The first Navigators, when they no longer saw islands in the Horizon, paid attention to the seeds which the Sea cast upon the shore of those where they were, and to the flight of the birds which were withdrawing from it. On the faith of these indications they directed their course toward lands which they had never yet seen. Thus were discovered the immense Archipelago of the Moluccas, the Islands of Guam, of Quiros, of the Society, and undoubtedly many others which are still unknown to us. There was not one but what invited them to land, by presenting some attractive accommodation. Some stretched out along the waves like Nereids, poured from their urns rills of fresh water into the Sea: it was thus that the island of Juan Fernandez, with it's rocks and cascades, presented itself to Admiral *Anson* in the midst of the South-Sea. Others, on the contrary, in the same Ocean, having their centres sunk, and their extremities elevated, and crowned with cocoa-trees, offered to their canoes basons at all seasons tranquil, swarming with fishes and sea-fowls: such is that known by the name of *Woesterland*, or the Land of Water, discovered by the Dutch Navigator *Schouton*. Others, in the morning, appeared to them in the bosom of the azure main, all over irradiated with the light of the Sun, as that one of the same Archipelago which goes by the name of *Aurora*. Some announced themselves in the darkness of night by the flames of a volcano, as a pharos blazing aloft amidst the waters, or by the odoriferous emanations of their perfumes.

There was not one of them of which the woods, the hills, and the downs, did not maintain some animal, naturally familiar and gentle, but which becomes savage only from the cruel experience which it acquires of Man. They saw fluttering around them, as they disembarked on their strands, the silken-winged birds of paradise, the blue pigeons, the cacatoes all over white, the lauris all red. Every new island tendered them some new present; crabs, fishes, shells, pearl-oysters, lobsters, turtles, ambergris; but the most agreeable, beyond all doubt, were the vegetables. Sumatra displayed on her shores, the pepper plant; Banda, the nutmeg; Amboyna, the clove: Ceram, the palm-sago; Florès, the benzoin and sandalwood: New-Guinea, groves of cocoa-trees; Otaheité, the bread-fruit. Every island arose in the midst of the Sea like a vase which supported a pre-

cious vegetable. When they discovered a tree ladened with unknown fruit, they gathered some branches of it, and ran to meet their companions with shouts of joy, exhibiting this new benefit bestowed by Nature.

From those early voyages, and from those ancient customs it is, that there has been diffused over all Nations, the practice of consulting the flight of birds before engaging in any enterprize, and that of going to meet strangers with the branch of a tree in the hand, in token of peace, and of joy at sight of a present from Heaven. These customs still exist among the islanders of the South-Sea, and among the free tribes of America. But not fruit-trees alone fixed the attention of the first Men. If some heroic action, or some irreparable disaster, had excited admiration, or inspired regret, the tree adjoining was ennobled by it. They preferred it with those fruits of virtue or of love, to such as produced food or perfume. Thus in the islands of Greece and of Italy, the laurel became the symbol of triumph, and the cypress that of eternal sorrow. The oak supplied crowns of undecaying honour to the well-deserving citizen, and simple grasses decorated the brows of the men who had saved their Country. O Romans! ye were a people worthy of the Empire of the World, in that you opened to every one of your subjects the career of virtuous exertion, and culled the most common plants of the field to serve as the badge of immortal glory, that a crown for the head of virtue might be found on every spot of the Globe.

From similar attractions it was, that from island to island the Nations of Asia made their way to the New World, where they landed on the shores of Peru. Thither they carried the name of children of that Sun whom they were pursuing. This brilliant chimera emboldened them to attempt the passage to America. It was not dissipated till they reached the shores of the Atlantic Ocean: but it diffused itself over the whole Continent, where most of the Chiefs of the Nations still assume the title of Children of the Sun.*

* I do not mean to affirm, however, that America was peopled only from the islands of the South-Sea. I believe that a passage was opened into it likewise by the North of Asia and of Europe. Nature always presents to Mankind different means for the attainment of the same end. But the principal population of the New World came from the islands of the South-Sea. This

Mankind, encompassed with so many blessings, continues to be wretched. There is not a single genus of animal but what lives in abundance and liberty, the greatest part without labour,

I am able to prove by a multitude of monuments still existing, and to the most remarkable of which I shall confine myself. It is demonstrated then by the worship of the Sun, established in India, in the islands in the South-Sea, and in Peru, as well as by the title of Suns, or Children of the Sun, assumed by many families of those countries; by the traditions of the Caraihs scattered over the Antilles, and in Brasil, who give themselves out as originally from Peru; by the very establishment of the Monarchy of Peru, as well as that of Mexico, situated on the western coast of America, which looks toward the islands of the South-Sea, and by the populousness of their Nations, which were much more considerable and more polished than those which inhabited the eastern coasts, which supposes the former to be of a much higher antiquity; by the prodigious diffusion of the Otaheitan language, the different dialects of which are spread over most of the islands of the South-Sea, and of which words innumerable are to be found in the language of Peru, as has lately been proved by a gentleman of great learning, and even in that of the Malays in Asia, some of which I myself was able to distinguish, particularly the word *maté*, which signifies to kill; by the practices common and peculiar to the Nations of the Peninsula of Malacca, of the islands of Asia, and those of the South-Sea and of Brasil, which are not the inspiration of Nature, such as that of making fermented and intoxicating liquors, and of chewing herbs and roots; by the channels of the commerce of antiquity which flowed in this direction, such as that of gold, which was very common in Arabia and in the Indies, in the time of the Romans, though there be very few mines of that metal in Asia; but above all, by the trade of emeralds, which must have run in that track from remote antiquity, in order to reach the Old Continent, where no mine of that gem is to be found. Hear what is said on this subject by *Tavernier*, who is worthy of credit when he speaks of the commerce of Asia, especially as it relates to jewels. "It is an error of long standing," says he, "which many persons have fallen into, to believe that the emerald was found originally in the East. Most jewellers, on first looking at a high coloured emerald are accustomed to say, this is an Oriental emerald. But they are mistaken, for I am well assured, that the East never produced one, either on the Continent, or in it's islands. I have made accurate enquiries into this, in all the voyages I made." He had travelled six times by land through India. Hence it must be concluded, that the so highly valued emeralds of the ancients, came to them from America, through the islands of the South-Sea, through those of Asia, through India, the Red Sea, and finally, through Egypt, from whence they had them.

To this may be objected the difficulty of navigating against the regular easterly winds, in order to pass from Asia to America, under the Torrid Zone; but relatively to this subject, I shall repeat, that the regular winds do not blow there from the East, but from the North-east and South-east, and depend so much the more on the two Poles, the nearer you approach toward the Line. This oblique direction of the wind was sufficient for persons who

all at peace with their species, all united to the objects of their choice, and enjoying the felicity of re-perpetuating themselves by their families ; whereas more than the half of Mankind is

navigated from island to island, and who had contrived barks the least liable to deflection, such as the double pros of the isles of Guam, the form of which seems to have been preserved in the double bales of the coast of Peru. *Schouten* found one of those double pros sailing more than six hundred leagues from the Island of Guam toward America. Besides, it appears likewise that the South-Sea has it's monsoons, which have not hitherto been observed. Hear the remarks made, on the variation of those winds, by an anonymous English Navigator, who sailed round the World, with Sir *Joseph Banks* and Mr. *Solander*, in the years 1768, 1769, 1770, and 1771, page 83. " The inhabitants of Otaheité trade with those of the adjacent islands which lie to the eastward, and which we had discovered on our passage. During three months of the year, the winds which blow from the *West quarter* are very favourable to them for carrying on this traffic." Admiral *Anson* likewise met with winds from the West in those Latitudes, which retarded him.

Certain Philosophers explain the correspondencies to be found between the inhabitants of the islands and those of Continents, by supposing islands to be lands once united to the Continent, but now swallowed up by the Ocean, the summit only, and a few of the inhabitants upon it, remaining above the water. But enough has been already said in this Work, to evince that maritime islands are not fragments separated from the Continent, and that they have mountains, peaks, lakes, hills, proportionable to their extent, and directed to the regular winds which blow over their seas. They have vegetables peculiar to themselves, and which no where else attain the same degree of beauty. Farther, had those islands formerly constituted part of our Continent, we should find in them all those of our quadrupeds which are to be met with in all climates ; there were no rats nor mice in America, and in the Antilles, previous to the arrival of the Europeans, if we may believe the testimony of the Spanish Historian *Herrera*, and of Father *du Tertre*. We should likewise have found in them the ox, the ass, the camel, the horse, but they contained none of these animals ; but plenty of our common poultry, ducks, dogs, swine, as well as among the Islanders of the South-Sea, who themselves had no other of our domestic animals. It is obvious that the first animals, such as the horse and the cow, being of a bulk and weight too considerable, could not possibly, be their utility ever so great, cross the seas in the small canoes of the early Navigators, who on the other hand would have been very careful not to transport with them such vermin as rats and mice.

Finally, let us revert to the general Laws of Nature. If all the islands of the South-Sea once formed a Continent, there must have been no sea then in the space which they occupy. Now it is indubitably certain, that were you at this day to take away from around them the Ocean by which they are encompassed, and the regular winds which blow over it, you would blast them with sterility. The islands of the South-Sea form, between Asia and America, a real bridge of communication, with a few arches alone of which we are acquainted, and of which it would not be difficult to discover the rest, from

doomed to celibacy. The other half curses the bands which have matched him. The greater part tremble at the thought of rearing a progeny, under the apprehension of being incapable to find subsistence for them. The greater part, in order to procure subsistence for themselves, are subjected to painful labours, and are reduced to the condition of slaves to their fellow-creatures. Whole Nations are exposed to perish by famine: others, destitute of territory, are piled a-top of each other, while the greatest part of the Globe is a wilderness.

There are many lands which never have been cultivated; but there is not one, known to Europeans, which has not been polluted with human blood. The very solitudes of the Ocean gulp down into their abysses vessels filled with men, sunk to the bottom by the hands of men. In cities, to all appearance so flourishing by their arts and their monuments, pride and craft, superstition and impiety, violence and perfidy, are in a state of incessant warfare, and keep the wretched inhabitants in perpetual alarm. The more that society is polished in them, the more numerous and cruel are the evils which oppress them. Is the industry of Man there most exerted, only because he is there most miserable? Why should the Empire of the Globe have been conferred on the single animal which had not the government of it's own passions? How comes it that Man, feeble and transitory, should be animated by passions at once ferocious and generous, despicable and immortal? How is it that, born without instinct, he should have been able to acquire such various knowledge? He has happily imitated all the arts of Nature, except that of being happy. All the traditions of the Human Race have preserved the origin of these strange contradictions; but Religion alone unfolds to us the cause of them. She informs us that Man is of a different order from the rest of animals; that his reason perverted has given offence to the AUTHOR of the Universe; that as a just punishment, he has been left to the direction of his own understanding; that he is capable of forming his reason only by the study of universal reason, displayed in the Works of Nature, and in the hopes which virtue inspires;

the other harmonies of the Globe. But here I restrain my conjectures on this subject. I have said enough to prove, that the same hand which has covered the Earth with plants and animals for the service of Man, has not neglected the different parts of his habitation

that by such means alone he can be enabled to rise above the animal, beneath the level of which he is sunk, and to re-ascend, step by step, along the steepy declivity of the celestial mountain from which he has been precipitated.

Happy is he in these days, who instead of rambling over the World, can live remote from Mankind ! Happy the Man who knows nothing beyond the circumference of his own Horizon, and to whom even the next village is an unknown land ! He has not placed his affections on objects which he must never more behold, nor left his reputation at the mercy of the wicked. He believes that innocence resides in hamlets, honour in palaces, and virtue in temples. His glory and his religion consist in communicating happiness to those around him. If he beholds not in his garden the fruits of Asia, or the shady groves of America, he cultivates the plants which delight his wife and children. He has no need of the monuments of Architecture to dignify and embellish his landscape. A tree, under the shade of which a virtuous man is reclined to rest, suggests to him sublime recollections ; the poplar in the forest recalls to his mind the combats of *Hercules* ; and the foliage of the oak reminds him of the crowning garlands of the Capitol.

STUDY XII.

OF SOME MORAL LAWS OF NATURE.

Weakness of Reason ; of Feeling ; Proofs of the Divinity, and of the Immortality of the Soul, from Feeling.

SUCH are the physical proofs of the existence of the DEITY, as far as the feebleness of my reason has enabled me to produce and arrange them. I have collected perhaps ten times as many ; but I perceived that I was after all but at the beginning of my career ; that the farther I advanced, the farther it extended itself before me ; that my own labour would soon overwhelm me ; and that, conformably to the idea of Scripture, nothing would remain to me after a complete survey of the Works of Creation, but the most profound astonishment.

It is one of the great calamities of human life, that in proportion as we approach the source of truth, it flies away from before us ; and that when by chance we are enabled to catch some of its smaller ramifications, we are unable to remain constantly attached to them. Wherefore has the sentiment which yesterday exalted me to Heaven, at sight of a new relation of Nature—wherefore has it disappeared to-day ? *Archimedes* did not remain always in an ecstasy, from the discovery of the relations of metals in the crown of King *Hiero*. He after that made other discoveries more congenial to his mind : such as that of the cylinder circumscribed within the sphere, which he gave directions to have engraved on his tomb. *Pythagoras* contemplated at length with indifference the square of the hypotenuse, for the discovery of which he had vowed, it is said, a whole hecatomb of oxen to *Jupiter*. I recollect that when I first became master of the demonstration of those sublime truths, I experienced a delight almost as lively as that of the great men who were the first inventors of them. Wherefore is it extinguished ? Why do I this day stand in need of novelties to procure me pleasure ? The mere animal is in this respect happier than we are : what pleased him yesterday will likewise

give him pleasure to-morrow : he fixes for himself a boundary which he never exceeds ; what is sufficient for him, always appears to him beautiful and good. The ingenious bee constructs commodious cells, but never dreams of rearing triumphal arches, or obelisks, to decorate her waxen city. A cottage was in like manner sufficient for Man, in order to be as well lodged as a bee. What need had he of five orders of Architecture, of pyramids, of towers, of kiosques ?

What then is that versatile faculty, called *reason*, which I employ in observing Nature ? It is, say the Schools, a perception of correspondencies, which essentially distinguishes Man from the beast. Man enjoys reason, and the beast is merely governed by instinct. But if this instinct always points out to the animal what is best adapted to it's situation, it is therefore likewise a reason, and a reason more precious than ours, in as much as it is invariable, and is acquired without the aid of long and painful experience. To this the Philosophers of the last age replied, that the proof of the want of reason in beasts is this, that they act always in the same manner ; thus they concluded, from the very perfection of their reason, that they had none. Hence we may see to what a degree great names, salaries, and associations, may give currency to the greatest absurdities ; for the argument of those Philosophers is a direct attack on the Supreme Intelligence itself, which is invariable in it's plans, as animals are in their instinct. If bees uniformly construct their cells of the same figure, it is because Nature always makes bees of the same character.

I do not mean however to affirm that the reason of beasts and that of Man is the same : ours is without dispute much more extensive than the instinct of each animal in particular ; but if Man is endowed with an universal reason, Must it not be because his wants are universal ? He likewise discerns it is true the wants of other animals ; but may it not be relatively to himself that he has made this his study ? If the dog gives himself no concern about the oats of the horse, it is perhaps because the horse is not subservient to the wants of the dog.

We possess, notwithstanding, natural adaptations peculiar to ourselves, such as the art of agriculture, and the use of fire. The knowledge of these undoubtedly would demonstrate our natural superiority, were it not at the same time a proof of our

wretchedness. Animals are under no necessity to kindle fires, and to cast seed into the ground, for they are clothed and fed by the hand of Nature. Besides, many of them have in themselves faculties far superior to our sciences, which are, if the truth might be told, foreign to us. If we have discovered some phosphoric substances, the luminous fly of the Tropics has in itself a focus of light which illuminates it during the night. While we are amusing ourselves in making experiments on electricity, the torpedo is employing it in self-defence: and while the Academies and States of Europe are proposing considerable prizes to the person who shall discover the means of determining the Longitude at Sea, the paillencu and the frigate are every day performing a flight of three or four hundred leagues between the Tropics, from East to West, without ever failing to find in the evening the rock from which they took their departure in the morning.

Another mortifying insufficiency presents itself, when Philosophy attempts to employ, in combating the Intelligence of Nature, that very reason which can be of no use but to discern it. What plausible arguments are detailed, respecting the danger of the passions, the frivolity of human life, the loss of fortune, of honour, of children! You can easily unhouse me, divine *Marcus Aurelius*, and you too, sceptical *Montagne*; but you have not provided for me another home. You put the staff of Philosophy into my hand, and say to me, walk on intrepidly; make the tour of the World, begging your bread; you are just as happy as we in our villas, with our wives, and respected by all around. But here is an evil of which you had no foresight. I have received, in my own country, calumny only as the reward of all my services; I have experienced nothing but ingratitude on the part of my friends, and even of my patrons; I am solitary, and have no longer the means of subsistence; I am a prey to nervous disorders; I stand in need of men, but my soul is troubled at the sight of them, while I reflect on the fatal reasons by which they are united, and feel that there is no possibility of interesting them, but by flattering their passions, and by becoming as vicious as they are. What good purpose does it serve to have studied virtue? It shudders at such recollections, and even without any reflection, merely at the sight of men. The first thing that fails me is that very reason on

which you desire me to lean for support. All your fine logic vanishes, precisely at the moment when I have most need of it. Put a reed into the hand of a sick person: the very first thing that will drop from him, when attacked by a fit of illness, is that same reed; if he ventures to rest his whole weight upon it, most probably it will break, and perhaps run through his hand. Death, you tell me, will cure every thing; but in order to die I have no occasion for all this reasoning; besides, I do not drop, in the vigour of life, into the arms of death, but dying and reasoning no longer, still however feeling and suffering.*

What is, once more, that reason of which we boast so triumphantly? As it is nothing more than the relation of objects to our wants, it is reduced then to mere personal interest. Hence it is that we have so many family reasons, reasons of associations, reasons of state; reasons of all countries, and of all ages; hence it is, that the reason of a young man is one thing, and that of an old man another; that the reason of a woman differs from that of a hermit, and a soldier's from a priest's. Every body, says the *Duke de la Rochefoucault*, has reason (is

* Thus, Religion has greatly the superiority over Philosophy, in as much as she supports us not by our reason but by our resignation. She would have us not on foot and stirring about, but stretched on a bed of languishing: not on the theatre of the World, but reposing at the footstool of the Throne of God; not tormented with solicitude about futurity, but confident and composed. When books, honours, fortune, and friends forsake us, she presents us as a pillow for our head, not the recollection of our frivolous and theatrical virtues, but that of our insufficiency; and instead of the arrogant maxims of Philosophy, she demands of us only calmness, peace, and filial confidence.

I must make one reflection more respecting this reason, or which amounts to the same thing, respecting this ingenuity of which we are so vain: namely this, that it appears to be the result of our miseries. It is very remarkable, that the Nations which have been most celebrated for their wit, their arts, and their industry, were the most miserable on the face of the Earth, from their government, their passions, or their discords. Read the history of the lives of most men who have been distinguished by the superiority of their intellectual powers, and you will find that they were extremely miserable, especially in their childhood. One-eyed persons, the lame, the hump-backed have in general more wit than other men, because, from being more disagreeably conformed, they apply their reasoning powers toward observing with more attention the relations of Society, in the view of screening themselves against it's oppression. Their humour it is true is commonly of the sarcastic kind, but this character is sufficiently applicable to what passes in the World for wit. Besides it was not Nature which rendered them malignant, but the raillery, or the contempt, of those with whom they have lived.

in the right). Yes, undoubtedly, and it is because every one has reason, that no one agrees with another.

This sublime faculty farther undergoes, from the first moments of it's expansion, a shock so violent, that it is rendered in some sort incapable of penetrating into the field of Nature. I do not speak of our methods and systems, which diffuse false lights over the first principles of human knowledge, by shewing us truth only in books, involved in machinery, and displayed on theatres. I have said something of those obstacles, in the objections which I have ventured to propose against the elements of our Sciences ; but the maxims instilled into us from our earliest infancy, *make a fortune, be the first*, are alone sufficient to subvert our natural reason ; they exhibit to us the just and the unjust only as they stand related to our personal interests, and to our ambition ; they usually attach us to the fortune of some powerful and reputable corps, and render us as it may happen atheists or devotees, debauched or continent, Cartesians or Newtonians, just as they affect the cause which has become our moving principle.

Good cause then we have to mistrust reason, as from the very first step it misleads us in our researches after truth and happiness. Let us enquire, whether there is not in Man some faculty more noble, more invariable, and of greater extent. Though, in prosecuting this enquiry, I have to present only views vague and indeterminate, I hope that men more enlightened than I can pretend to be, may one day fix them, and carry them much farther. In this confidence, with the feeble powers which I possess, I am going to engage in a career, which is well worthy the Reader's most serious attention.

Descartes lays this down as the basis of the first natural truths : *I think, therefore I exist*. As this Philosopher has acquired a very high degree of reputation, which he merited besides by his knowledge in Geometry, and above all by his virtues, his argument in proof of existence has been greatly extolled, and dignified with the title of axiom. But, if I am not mistaken, this argument labours under an essential defect, in that it has not the generality of a fundamental principle ; for it implicitly follows, that when a man does not think, he ceases to exist, or at least to have a proof of his existence. It follows farther, that the animal creation, to which *Descartes* denied the power of

thought, had no proof that they existed ; and that the greatest part of beings are in a state of non-existence with respect to us inasmuch as they excite in us simple sensations merely, of forms, of colours, and of movements, without any reference to thought. Besides, the results of human thought having been frequently employed, from their versatility, to suggest doubts respecting the existence of God, and even of our own, as was the case with the sceptic *Pyrrho*, this reasoning, like all the operations of the human understanding, falls under well-grounded suspicion.

I substitute therefore in place of the argument of *Descartes*, that which follows, as it appears to me both more simple and more general ; *I feel, therefore I exist*. It extends to all our physical sensations, which admonish us much more frequently of our existence than thought does. It has for it's moving principle an unknown faculty of the soul, which I call *sentiment*, or mental feeling, to which thought itself must refer ; for the evidence to which we attempt to subject all the operations of our reason is itself simply sentiment.

I shall first make it appear, that this mysterious faculty differs essentially from physical sensations, and from the relations presented to us by reason, and that it blends itself in a manner constant and invariable in every thing that we do ; so that it is, if I may be allowed the expression, human instinct.

As to the difference of sentiment from physical sensation, it is evident that *Iphigenia* at the altar gives us an impression of a very different nature from that produced by the taste of a fruit, or by the perfume of a flower ; and as to that which distinguishes it from a process of the understanding, it is certain that the tears and the despair of *Clytemnestra* excite in us emotions of a very different kind from those suggested by a satire, a comedy, or even if you will by a mathematical demonstration.

Not but that reason may sometimes issue in sentiment, when it presents itself with evidence ; but the one is only, with relation to the other, what the eye is with relation to the body, that is an intellectual vision : besides, mental feeling appears to me to be the result of Laws of Nature, as reason is the result of political Laws.

I shall give no farther definition of this obscure principle, but I shall render it sufficiently intelligible, if I am so happy as to

make it felt. And here I flatter myself with success by first stating an opposition between it and reason. It is very remarkable that women, who are always nearer to Nature, from their very irregularities, that men with their pretended wisdom, never confound these two faculties, and distinguish the first by the name of sensibility, or sentiment, by way of excellence, because it is in truth the source of our most delicious affections. They are continually on their guard against confounding, as most men do, the understanding and the heart, reason and sentiment. The one as we have seen is frequently our own work ; the other is always the work of Nature. They differ so essentially from each other, that if you wish to annihilate the interest of a Work which abounds in sentiment, you have only to introduce an infusion of reasoning.

This is a fault which the most celebrated Writers have committed, in all the ages in which Society completes it's separation from Nature. Reason produces many men of intelligence in ages pretendedly polished ; and sentiment, men of genius, in ages pretendedly barbarous. Reason varies from age to age, and sentiment is always the same. The errors of reason are local and changeable, but the truths of sentiment are invariable and universal. Reason makes the I Greek, the I Englishman, the I Turk ; and sentiment, the I Man, and the I Divine. We stand in need at this day of commentaries, in order to understand the books of antiquity which are the work of reason, such as those of most Historians, and Poets, satyrical and comic, as *Martial*, *Plautus*, *Juvenal*, and even those of the past age, as *Boileau* and *Moliere* ; but none will ever be necessary in order to be moved by the supplications of *Priam* at the feet of *Achilles*, by the despair of *Dido*, by the tragedies of *Racine*, and the lively fables of *La Fontaine*. We frequently stand in need of many combinations, for the purpose of bringing to light some concealed reason of Nature ; but the simple and pure sentiments of repose, of peace, of gentle melancholy, which she inspires, comes to us without effort.

Reason, I grant, procures for us pleasures of a certain kind ; but she discovers to us some small portion of the order of the Universe, she exhibits to us at the same time our own destruction attached to the Laws of it's preservation ; she presents to us at once the evils which are past, and those which are to

come ; she furnishes arms to our passions at the very time when she is demonstrating to us their insufficiency. The farther that she carries us, the more are the proofs which she accumulates, when we come back to ourselves, of our own nothingness ; and so far from soothing our pains by her researches, she frequently aggravates them bitterly by the discoveries which she makes. Sentiment, on the contrary, blind in it's desires, embraces the monuments of all countries, and of all ages ; it is soothed to a delicious complacency in the midst of ruins, of combats, and of death itself, in contemplating an undescribable eternal existence ; it pursues, in all it's appetites, the attributes of Deity, infinity, extension, duration, power, grandeur, and glory ; it mingles the ardent desires of these with all our passions ; it thus communicates to them a certain sublime impulse ; and, by subduing our reason, itself becomes the most noble, and the most delicious instinct of human life.

Sentiment demonstrates to us, much better than reason, the spirituality of the soul ; for reason frequently proposes to us as an end the gratification of our grossest passions,* whereas sentiment is ever pure in it's propensities. Besides, a great many natural effects which escape the one, are under the controul of the other ; such is, as has been observed, evidence itself, which is merely a matter of feeling, and over which reflection exercises no restraint : such too is our own existence. The proof of it is not in the province of reason ; for why is it that I exist ? where is the reason of it ? But I feel that I exist, and this sentiment is sufficient to produce conviction.

This being laid down, I proceed to demonstrate that there are two powers† in Man, the one animal, and the other intellec-

* Listen to the voice of reason, is the incessant admonition of our moral Philosophers. But do they not perceive that they are putting us into the hand of our greatest enemy ? Has not every passion a reason at command ?

† It is from want of attention to those two powers, that so many celebrated performances, on the subject of Man, present a false colouring. Their Authors sometimes represent him to us as a metaphysical object. You would be tempted to think that the physical wants, which stagger even the Saints, are only feeble accessories of human life. They compose it merely of monads, of abstractions, and of moralities. Others discern nothing in man but an animal, and distinguish in him only the coarsest grossness of sense. They never study him without the dissecting knife in their hand, and when he is dead,

tual, both of an opposite nature, and which by their union constitute human life ; just as the harmony of every thing on Earth is composed of two contraries.

that is to say, when he is man no longer. Others know him only as a political individual : they perceive him only through the medium of the correspondencies of ambition. It is not man that interests them ; it is a Frenchman, an Englishman, a Prelate, a Gentleman. *Homer* is the only Writer with whom I am acquainted who has painted Man complete : all others, the best not excepted, present nothing but a skeleton of him. The *Iliad* of *Homer*, if I may be allowed to judge, is the painting of every Man, and it is that of all Nature. All the passions are there, with their contrasts and their shades, the most intellectually refined, and the most sensually gross. *Achilles* sings the praises of the Gods to the sound of his lyre, and tends the cookery of a leg of mutton in a kettle. This last trait has given grievous offence to our theatrical writers, who deal in the composition of artificial heroes, namely such as disguise and conceal their first wants, as their authors themselves disguise their own to Society. All the passions of the human breast are to be found in the *Iliad* : furious wrath in *Achilles*, haughty ambition in *Agamemnon*, patriotic valour in *Hector* ; in *Nestor*, unimpassioned wisdom ; in *Ulysses*, crafty prudence ; calumny in *Thersites* ; voluptuousness in *Paris* ; faithless love in *Helen* ; conjugal love in *Andromache* ; paternal affection in *Priam* ; friendship in *Patroclus* ; and so on : and besides this, a multitude of intermediate shades of all these passions, such as the inconsiderate courage of *Diomedes*, and that of *Ajax*, who dared to challenge the Gods themselves to the combat : then the oppositions of situation and of fortune which detach those characters ; such as a wedding, and a country festival, depicted on the formidable buckler of *Achilles* ; the remorse of *Helen*, and the restless solicitude of *Andromache* ; the flight of *Hector*, on the point of perishing under the walls of his native city, in the sight of his people, whose only defender he was ; and the peaceful objects presented to him at that tremendous moment, such as the grove of trees, and the fountain to which the Trojan young women were accustomed to resort to wash their robes, and where they loved to assemble in happier days.

This divine Genius having appropriated to his heroes a leading passion of the human heart, and having put it in action in the most remarkable phases of human life, has allotted in like manner the attributes of God to a variety of Divinities, and has assigned to them the different kingdoms of Nature ; to *Neptune*, the Ocean ; to *Pluto*, the infernal regions ; to *Juno*, the air ; to *Vulcan*, the fire ; to *Diana* the forests ; to *Pan*, the flocks ; in a word, the Nymphs, the Naiads, nay the very Hours, have all a certain department on the Earth. There is not a single flower but what is committed to the superintendence of some Deity. It is thus that he has contrived to render the habitation of Man celestial. His Work is the most sublime of Encyclopedias. All the characters of it are so exactly in the human heart, and in Nature, that the names by which he has designated them have become immortal. Add to the majesty of his plans a truth of expression which is not to be ascribed alone to the beauty of his language, as certain Grammarians pretend, but to the vast extent of his observation of Nature. It is thus for example, that he

Certain Philosophers have taken pleasure in painting Man as a god. His attitude they tell us is that of command. But in order to his having the air of command it is necessary that others should have that of submission, without which he would find an enemy in every one of his equals. The natural empire of Man extends only to animals ; and in the wars which he wages with them, or in the care which he exercises over them, he is frequently constrained to drop his attitude of emperor, and to assume that of a slave.

Others represent Man as the perpetual object of vengeance to angry Heaven, and have accumulated on his existence, all the miseries which can render it odious to him. This is not painting Man. He is not formed of a simple nature like other animals, each species of which invariably preserves it's proper character ; but of two opposite natures, each of which is itself farther subdivided into several passions, which form a contrast. In virtue of one of these natures he unites in himself all the wants, and all the passions of animals ; and in virtue of the other, the ineffable sentiments of the Deity. It is to this last instinct, much more than to his reflective powers, that he is indebted for the conviction which he has of the existence of God ; for I suppose that having by means of his reason, the faculty of perceiving the correspondencies which exist between the objects of Nature, he found out the relations which subsist between an island and a tree, a tree and a fruit, a fruit and his own wants ; he would readily feel himself determined, on seeing an Island, to look for food upon it : but his reason, in shewing him the links of four natural harmonies, would not refer

ails the sea *impurpled*, at the moment that the Sun is setting ; because that then the reflexes of the Sun in the Horizon render it of that colour, as I myself have frequently remarked. *Virgil*, who has imitated him closely, abounds in these beauties of observation, to which Commentators pay very little if any attention. In the *Georgics*, for instance, *Virgil* gives to the Spring the epithet of *blushing* ; *vere rubenti*, says he. As his Translators and Commentators have taken no pains to convey this, any more than a multitude of similar touches, I was long impressed with the belief that this epithet was introduced merely to fill up the measure of the verse : but having remarked that early in Spring, the shoots and buds of most trees assumed a ruddy appearance, previously to throwing out their leaves, I thence was enabled to comprehend what was the precise moment of the season which the Poet intended to describe by *vere rubenti*.

the cause of them to an invisible Author, unless he had the sentiment of it deeply impressed on his heart. It would stop short at the point where his perceptions stopped, and where those of animals terminate. A wolf which should swim over a river in order to reach an island on which he perceived grass growing, in the hope of there finding sheep likewise, has an equal conception of the links which connect the four natural relations of the island, the grass, the sheep, and his own appetite: but he falls not down prostrate before the intelligent Being who has established them.

Considering man as an animal, I know of no one to be compared with him in respect of wretchedness. First of all he is naked, exposed to insects, to the wind, to the rain, to the heat, to the cold, and laid under the necessity, in all countries, of finding himself clothing. If his skin acquires in time sufficient hardness to resist the attacks of the elements, it is not till after cruel experiments which sometimes flay him from top to toe. He knows nothing naturally as other animals do. If he wants to cross a river, he must learn to swim; nay, he must in his infancy be taught to walk and to speak.* There is no country so happily situated in which he is not obliged to prepare his food with considerable care and trouble. The banana and the bread-fruit tree give him between the Tropics provisions all the year round; but then he must plant those trees, he must enclose them with thorny fences to preserve them from the beasts; he must dry part of the fruits for a supply during the hurricane season; and must build repositories in which to lay them up. Besides those useful vegetables are reserved for certain privileged islands alone; for over the rest of the Earth the culture of alimentary grains and roots requires a great multitude of arts and preparations. Suppose him to have collected around him every blessing that his heart can desire, the love and the pleasure which flow from abundance, avarice, thieves, the incursions of the enemy, disturb his enjoyment. He must have laws, judges, magazines, fortresses, confederacies, and regiments, to protect from without and from within his ill-fated corn-field. Finally, when it is in his power to enjoy with all the tranquillity of a sage

* The very name of infant is derived from the Latin word *infans*, that is to say, one who cannot speak.

languor takes possession of his mind ; he must have comedies, balls, masquerades, amusements to prevent him from reasoning with himself.

It is impossible to conceive how a Nation could exist with the animal passions simply. The sentiments of natural justice, which are the basis of legislation, are not the results of our mutual wants, as has been by some pretended. Our passions are not retrogressive ; they have ourselves alone for their centre. A family of savages, living in the midst of plenty, would be no more concerned about the misery of their neighbours perishing for want, than we concern ourselves at Paris to think that our sugar and coffee are costing Africa rivers of tears.

Reason itself, united to the passions, would only stimulate their ferocity ; for it would supply them with new arguments long after their desires were gratified. It is, in most men, nothing more than the relation between beings and their wants, that is their personal interest. Let us examine the effect of it, combined with love and ambition, the two tyrants of human life.

Let us first suppose a state entirely governed by Love, such as that on the banks of the Lignon, imagined by the ingenious *d'Urfeius*. I beg leave to ask, Who would be at the trouble of building houses there, and of labouring the ground ? Must we not suppose, that such a country would contain servants whose industry should compensate the idleness of their masters ? Will not those servants be reduced to the necessity of abstaining from making love, in order that their masters may be incessantly employed in it ? Besides, in what manner are the old people of both sexes to pass their time ? A fine spectacle for them truly, to behold their children always indulging in the dalliance of the tender passion ! Would not such a spectacle become to them a perpetual source of regret, of ill-humour, of jealousy, as it is among those of our own country ? Such a government, in truth, were it even in the islands of the South-Sea, under groves of the cocoa and bread-fruit trees, where there was nothing to do but to eat and make love, would soon be torn with discord and oppressed with languor.

But, on the supposition that the principle of *social reason* were to oblige every family to labour each for its own support, and to introduce more variety into their way of living, by inviting to it our arts and sciences ; it would quickly accelerate their de-

struction. We must by no means depend on ever hearing there any of those affecting dialogues which *d'Urfeius* puts into the mouth of *Astræa* and *Celadon*; they are dictated neither by animal love nor by enlightened reason. Both of these employ a very different logic. When a lover, illuminated there with the science which he had borrowed of us, wished to inspire his mistress with a mutual passion, if however it were needful to employ discourse in order to accomplish this, he would talk to her of springs, of masses, of attractions, of fermentations, of the electric spark, and of the other physical causes which determine, according to our modern systems, the propensities of the two sexes, and the movements of the passions. *Political reasons* would interpose, and affix the seal to their union, by stipulating, in the melancholy and mercenary language of our contracts, for dowries, maintenances, redemptions, pin-monies, post-obits. But the *personal reason* of each contracting party would quickly separate them. As soon as a man saw his wife overtaken with disease, he would say to her: "My temperament calls for a wife who enjoys health, and constrains me to abandon you." She would answer him undoubtedly, in order to preserve consistency: "You do well to obey the dictates of Nature. I should in like manner, have looked out for another husband had you been in my place." A son would say to his aged and declining father: "You begot me for your pleasure, it is time that I should live for mine." Where should we find citizens disposed to unite for maintaining the laws of such a society? Where find soldiers disposed to meet death in defence of it, and a magistrate who would undertake to govern it? I say nothing of an infinite number of other disorders, which follow in the train of that blind and headstrong passion, even when directed by cool and dispassionate reason.

If, on the other hand, a Nation were under the dominion of ambition solely, it would come still sooner to destruction; either from external enemies, or by means of it's own citizens. It is, first, difficult to imagine how it could be reduced to form, under the authority of one Legislator, for how can we conceive the possibility of ambitious men voluntarily submitting to another man? Those who have united them, as *Romulus*, *Mahomet*, and all founders of Nations, have commanded attention and obedience only by speaking in the name of the DEITY. But sup-

posing this union by whatever means accomplished, Could such an association ever be happy? Let Historians extol conquering Rome ever so highly, Is it credible that her citizens then deserved the appellation of fortunate? What, while they were spreading terror over the Globe, and causing floods of tears to flow, were there at Rome no hearts oppressed with terror, and no eye overflowing for the loss of a son, of a father, of a husband, of a lover? Were the slaves, who constituted by far the greatest part of her inhabitants, were they happy? Was the General of the Roman army himself happy, crowned with laurels as he was, and mounted on a triumphal car, around which, in conformity to a military law, his own soldiers were singing songs in which his faults were exposed, to prevent his waxing proud and forgetting himself? And when Providence permitted *Paulus Emilius* to triumph over a King of the Macedonians, and his poor children, who stretched out their little hands to the Roman people to excite compassion, it was so ordered that the conqueror should at that very season suffer the loss of his own children, that no one might be allowed to triumph with impunity over the tears of Mankind.

This very People, however, so disposed to pursue their own glory through the calamity of others, were obliged, in order to dissemble the horror of it, to veil the tears of the Nations with the interest of the Gods, as we disguise with fire the flesh of the animals which is to serve for food. Rome, following the order of destiny, was to become at length the capital of the World. She armed her ambition with a *celestial reason*, in order to render her victorious over powers the most formidable, and to curb by means of it the ferocity of her own citizens, by inuring them to the practice of sublime virtue. What would they have become, had they given themselves up without restraint to that furious instinct? They would have resembled the savages of America, who burn their enemies alive, and devour their flesh still streaming with blood. This Rome at last experienced, when her Religion presented no longer any thing to her enlightened inhabitants except unmeaning imagery. Then were seen the two passions natural to the heart of Man, ambition and love, inviting to a residence within her walls the luxury of Asia, the corruptive arts of Greece, proscriptions, murders, poisonings, conflagrations, and giving her up a prey to barba-

rous Nations. The Theutates of the Gauls then issuing from the forests of the North, and arriving at the Capitol, made the Roman *Jupiter* to tremble in his turn.

Our *reasons of state* are in modern times less sublime, but are not for that less fatal to the repose of Mankind, of which a judgment may be formed by the wars of Europe, which are continually disturbing the Globe. A Nation delivered up to it's passions, and to simple *reasons of state*, would speedily accumulate upon itself all the miseries incident to humanity; but Providence has implanted in the breast of Man a sentiment which serves as a counterbalance to the weight of these, by directing his desires far beyond the objects of this World; the sentiment I mean is that of the existence of the DEITY. Man is not Man because he is a reasonable animal, but because he is a religious animal.

It is remarked by *Cicero* and *Plutarch*, that there was not a single People known up to their time, among whom there were no traces of religion to be found. The sentiment of DEITY is natural to Man. It is that illumination which *St. John* denominates *the true Light, which lighteth every Man that cometh into the World*. I find great fault with certain modern Authors, and even some of them Missionaries, for having asserted that certain Nations were destitute of all sense of DEITY.* This is in my apprehension the blackest of calumnies with which a Nation can be branded, because it of course entirely strips them of the existence of every virtue; and if such a Nation betrays any appearance of virtue, it can only be under the impulse of the most abominable of vices, which is hypocrisy: for there can be no virtue distinct from Religion. But there is not a single one of those inconsiderate Writers, who does not at the same time himself furnish the means of refuting his own imputation; for some of them acknowledge that these very atheistical Nations on certain days present homage to the Moon; or that they

* I agree, in this respect, with our author. A nation without some sense of Deity, I do not believe does exist. It has, indeed, been said, that the Gipsies, a vagabond race from Hindustan, acknowledge not the existence of a superior being, and have no intimations, however obscure, of a future state. If this be true (but I am well persuaded it is not true), it is one of the most remarkable facts in the history of the human species.—B. S. R.

retire into the woods to perform certain ceremonies, the knowledge of which they carefully conceal from strangers.

Father *Gobien*, among others, in his *History of the Marianes Islands*, after having affirmed that their inhabitants had no knowledge of any Deity, and discovered not the slightest idea of Religion, tells us immediately after, that they practise invocation of the dead, to whom they give the appellation of *anitis*, whose skulls they preserve in their houses, and to which they ascribe the power of controlling the elements, of changing the seasons, and of restoring health ; that they are persuaded of the immortality of the soul, and acknowledge a Paradise and a Hell. Such opinions clearly demonstrate that they have ideas of the DEITY.

All Nations have the sentiment of the existence of GOD ; not that they all raise themselves to Him after the manner of a *Newton* and a *Socrates*, in contemplation of the general harmony of his Works, but by dwelling on those of his benefits which interest them the most. The Indian of Peru worships the Sun ; he of Bengal, the Ganges, which fertilizes his plains ; the black *Iolof*, the Ocean, which cools his shores ; the *Samoiède* of the North, the rein-deer which feeds him. The wandering *Iroquois* demands of the Spirits which preside over the lakes and the forests plentiful fishing and hunting seasons. Many Nations worship their Kings. There is not one of them which, in order to render more dear to men those august dispensers of their felicity, have not called in the intervention of some Divinity for the purpose of consecrating their origin. Such are in general the Gods of the Nations : but when the passions interpose, and darken among them this divine instinct, and blend with it either the madness of ambition, or the seduction of voluptuousness, you behold them prostrating themselves before serpents, crocodiles, and other gods too abominable to be mentioned. You behold them offering in sacrifice the blood of their enemies and the virginity of their daughters. Such as is the character of a People such is it's religion. Man is carried along by this celestial impulse so irresistibly, that when he ceases to take the DEITY for his model, he never fails to make one after his own image.

There are therefore two powers in Man, the one animal, the other divine. The first is incessantly giving him the sentiment

of his wretchedness ; the second constantly awakening in him that of his own excellence : and from their conflicts are produced the varieties and the contradictions of human life.

By means of the sentiment of our wretchedness it is that we become alive to every thing which presents to us the idea of asylum and protection, of ease and accommodation. Hence it is that most men cherish the thought of calm retreats, of abundance, and of all the blessings which bountiful Nature has provided on the Earth to supply our wants. It is this sentiment which gave to Love the chains of *Hymen*, in order that man might one day find the companion of his pains in that of his pleasures ; and that children might be insured of the assistance of their parents. It is this which renders the warm and easy tradesman so eager after relations of court-intrigues, of battles, and descriptions of tempests, because dangers external and distant increase internal happiness and security. This sentiment frequently mingles with the moral affections : it looks for support in friendship, and for encouragement in commendation. It is this which renders us attentive to the promises of the ambitious man, when we are eager to follow him like slaves, seduced by the ideas of protection with which he amuses us. Thus the sentiment of our wretchedness is one of the most powerful bonds of political society, though it attaches us to the Earth.

The sentiment of Deity impels us in a contrary direction.* It was this which conducted Love to the altar, and dictated to

* Whenever any one has lost this first of harmonies all the others follow it. Does it not well deserve to be remarked, that all the Writings of Atheists are insufferably dry and uninteresting ? They sometimes fill you with astonishment, but never do they touch the heart. They exhibit caricatures only, or gigantic ideas. They are totally destitute of order, of proportion, of sensibility. I do not exempt from this censure any one except the poem of *Lucretius*. But this very exception, as has been said before, only confirms the truth of my observation ; for when this Poet wished to please, he found himself under the necessity of introducing Deity, as it is evident from his exordium, which commences with that beautiful apostrophe : *Alma Venus*, &c. Every where else, when he sets about a display of the Philosophy of *Epicurus* his insipidity becomes absolutely insupportable.†

† I cannot agree in sentiment with Saint-Pierre, that *Lucretius* and the other Epicureans were Atheists. I grant that the notions of God entertained by these Philosophers were much less sublime than those which have been conveyed to us through the medium of the Sacred Writings : or than those which arise in the mind of the virtuous Philosopher, who has studied with

the lips of the Lover the first vows of fidelity ; it devoted the first children to Heaven, while as yet there was no such thing as political Law ; it rendered Love sublime, and Friendship generous ; with one hand it succoured the miserable, and opposed the other to tyrants ; it became the moving principle of generosity and of every virtue. Satisfied with the consciousness of having deserved well of Mankind, it nobly disdained the recompense of applause. When it shewed itself in arts and sciences, it became the ineffable charm which transported us in contemplating them : the moment it withdrew from them, languor succeeded. It is this sentiment which confers immortality on the men of genius who discover to us in Nature new relations of intelligence.

When these two sentiments happen to cross each other, that is, when we attach the divine instinct to perishable objects, and the animal instinct to things divine, our life becomes agitated by contradictory passions. This is the cause of those innumerable frivolous hopes and fears with which men are tormented. My fortune is made, says one, I have enough to last me *for ever* ; and tomorrow he drops into the grave. How wretched am I ! says another, I am undone *for ever* ; and death is at the door to deliver him from all his woes. We are bound down to life, said *Michael Montaigne*, by the merest toys ; by a glass : yes, and wherefore ? Because the sentiment of immortality is impressed

attention, the forms, the structure, the functions, and the uses, of the animal and vegetable bodies, by which we are surrounded. I say nothing of the other parts of Nature.—I think Mr. Good, in his truly valuable work, which I have already quoted, has ably vindicated the Epicureans from the charge of Atheism : and I do not hesitate to agree in sentiment with this learned writer, that *Lucretius*, in the following inimitable lines, but not in these alone, emphatically acknowledges the existence of a SUPREME BEING :

“ Usque adeo res humanas VIS ABBITA quædam
 “ Obterit : et pulchros fasces sævasque secures,
 “ Proculcare, ac ludibrio sibi habere, videtur.”

Thus translated by Good.

“ So, from his awful shades some POWER UNSEEN
 “ O'erthrows all human greatness ! treads to dust
 “ Rods, ensigns, crowns—the proudest pomps of state,
 “ And laughs at all the mockery of man !”

The Nature of things Book v. l. 1260.—1263.

—B. § B.

on that glass. If life and death frequently appear insupportable to men, it is because they associate the sentiment of their end with that of death, and the sentiment of infinity with that of life. Mortals, if you wish to live happy, and to die in composure, do not let your Laws offer violence to those of Nature. Consider that at death, all the troubles of the animal come to a period; the cravings of the body, diseases, persecutions, calumnies, slavery of every kind, the rude combats of man's passions with himself, and with others. Consider that at death, all the enjoyments of a moral being commence; the rewards of virtue, and of the slightest acts of justice and of humanity, undervalued perhaps or despised by the World, but which have in some measure brought us nearer, while we were upon the Earth, to a Being righteous and eternal.

When these two instincts unite in the same place, they confer upon us the highest pleasure of which our nature is susceptible; for in that case our two natures, if I may thus express myself, enjoy at once.* I am going to trace a slight sketch of the combination of their harmonies; after which we shall pursue the track of the celestial sentiment which is natural to us, as manifested in our most ordinary sensations.

Let me suppose you then, Reader, disgusted, and wearied out with the disorders of Society, in search of some happy spot toward the extremity of Africa, on which the foot of European never alighted. Sailing along the Mediterranean, your vessel is tossed by the violence of the tempest, and shipwrecked upon a rock, just as it is beginning to grow dark. Through the favour of Heaven you scramble safe to land: you flee for shelter to a grotto, rendered visible by the glare of the lightning, at the bottom of a little valley. There, retired to the covert of this asylum, you hear all night long the thunder roaring, and the rain descending in torrents. At day break you discover behind you an amphitheatre of enormous rocks, perpendicularly steep as a wall. From their bases, here and there start out clumps of fig-

* To these two instincts may be referred all the sensations of life which frequently seem to be contradictory. For example, if habit and novelty be agreeable to us, it is that habit gives us confidence respecting our physical relations, which are always the same; and novelty promises new points of view to our divine instinct, which is ever aiming at the extension of its enjoyments.

trees, covered over with white and purple fruit, and tufts of carobs loaded with brown pods ; their summits are crowned with pines, wild olive-trees, and cypresses bending under the violence of the winds. The echoes of these rocks repeat in the air the confused howling of the tempest, and the hoarse noise of the raging Sea, perceptible to the eye at a distance. But the little valley where you are is the abode of tranquillity and repose. In it's mossy declivities the sea-lark builds her nest, and on these solitary strands the mavis expects the ceasing of the storm.

By this time the first fires of *Aurora* are lengthening over the flowery stachys, and over the violet beds of the thyme which clothe the swelling hillocks . The brightening rays disclose to view, on the summit of an adjoining eminence, a cottage overshadowed with trees. Out of it issue a shepherd, his wife, and his daughter, who take the path that leads to the grotto, with vases and baskets on their heads. It is the spectacle of your distress which attracts these good people toward you. They are provided with fire, fruits, bread, wine, clothing, for your relief. They vie with each other in rendering you the offices of hospitality. The wants of the body being satisfied, those of the mind begin to call for gratification. Your eye eagerly wanders along the surface of the deep, and you are enquiring within yourself, " On what part of the World am I thrown ? " The shepherd perceives your anxiety, and removes it, addressing you in these words : " That distant Island which you see to the North is Mycone. There is Delos a little to the left, and Paros directly in front. That in which we are is Naxos ; you are on that very part of the island where *Ariadne* was formerly abandoned by *Theseus*. It was on that long bank of white sand which projects below into the Sea, that she passed the days, with her eyes rivetted on that point of the Horizon where the vessel of her faithless lover at length ceased to be visible : and into this very grotto where you now are, she retired at night to mourn over his departure. To the right between these two little hills, on the top of which you behold some confused ruins, stood a flourishing city named Naxos. It's female inhabitants, touched with the misfortunes of the daughter of *Minos*, resorted hither to look for her, and to comfort her. They endeavoured at first to divert her atten-

tion by amusing conversation; but nothing could give her pleasure but the name and the recollection of her beloved *Theseus*. These damsels then counterfeited letters from that Hero, breathing the tenderest affection, and addressed to *Ariadne*. They flew to deliver them to her, and said, Take comfort, beautiful *Ariadne*, *Theseus* will soon return: *Theseus* thinks of nothing but you. *Ariadne*, in an ecstasy of delight, read the letters, and with a trembling hand hastened to answer them. The Naxian girls took charge of her answers, and promised to have them speedily conveyed to *Theseus*, in this manner they amused her grief. But when they perceived that the sight of the Sea plunged her more and more into melancholy, they decoyed her into those extensive groves which you observe below in the plain. There they invented every species of festivity that could lull her fond regret to rest. Sometimes they formed around her coral dances, and represented, by the linking of their hands, the various windings of the labyrinth of Crete, out of which by her aid escaped the happy *Theseus*: sometimes they affected to put to death the terrible *Minotaur*. The heart of *Ariadne* expanded to the perception of joy at the sight of representations which called to her remembrance the power of her father, the glory of her lover, and the triumph of her own charms, which had repaired the destiny of Athens: but when the winds conveyed to her ear, through the music of the tabor and of the flute, the distant noise of the billows breaking on the shore from which she saw the cruel *Theseus* take his departure, she turned her face toward the Sea and began to weep. Thus the Naxians were made sensible that unfortunate love can find, in the very lap of gaiety, the means of embittering it's anguish; and that the recollection of pain is to be lost only by losing that of pleasure. They endeavoured therefore to remove *Ariadne* from scenes and sounds which were continually recalling the idea of her lover. They persuaded her to visit their city, where they provided for her magnificent banquets, in superb apartments raised on columns of granite. Into these no male was permitted to enter, and no noise from without could make itself heard. They had taken care to cover the pavement, the walls, the doors, and the windows, with the richest tapestry, on which were represented meadows, vineyards, and en-

“chanting solitudes. A thousand lamps and torches dazzled the
“eye. They made *Ariadne* seat herself in the midst of them
“on cushions; they placed a coronet of ivy, with it’s black
“clusters, upon her flaxen hair, and around her pale forehead;
“then they arranged at her feet urns of alabaster replenished
“with the choicest wines; they poured them out into cups of
“gold, which they presented to her, saying; Drink, lovely
“daughter of *Minos*; this island produces the richest presents
“of *Bacchus*. Drink, wine dissipates care. *Ariadne*, with a
“smile, suffered herself to be persuaded. In a little time the
“roses of health re-appeared on her countenance, and a report
“was immediately spread over *Naxos* that *Bacchus* was come
“to the relief of the mistress of *Theseus*. The inhabitants,
“transported with joy, reared a temple to that God, of which
“you still see some columns and the frontispiece on that rock in
“the midst of the waves. But wine only added fuel to the love
“of *Ariadne*. She gradually pined away, a victim to her sad
“regrets, and even to her fond hopes. See there at the extremi-
“ty of this valley, on a little hillock covered with marine-worm-
“wood, is her tomb, and her statue still looking toward the Sea.
“You can scarcely now distinguish in it the figure of a female;
“but there is even now discernible in it the restless attitude of
“a lover. This monument, as well as every other of the coun-
“try, has been mutilated by time, and still more by the hand of
“barbarians; but the memory of suffering virtue is not, on the
“Earth, at the mercy of tyrants. The tomb of *Ariadne* is in
“the possession of the Turks, and her crown is planted among
“the stars. As for us, escaped from the notice of the powers
“of this World, by means of our very obscurity, we have
“through the goodness of Heaven found liberty at a distance
“from the Great, and happiness in a desert. Stranger, if you
“are still capable of being affected by the blessings of Nature,
“it is in your power to share them with us.”

At this recital, the gentle tears of humanity trickle down the cheeks of his spouse, and of his youthful daughter, as she breathes a sigh to the memory of *Ariadne*; and I greatly doubt whether an Atheist himself, who acknowledges nothing else in Nature but the Laws of matter and of motion, could be insensible to those present correspondencies, and those ancient reco!-lections.

Voluptuous men ! Greece alone, you tell me, presents scenes and points of view so tenderly affecting. *Ariadne* accordingly has a place in every garden ; *Ariadne* presents herself to view in every collection of painting. From the turret of your own castle, throw your eye over the plains below. As the prospect gradually extends, it terminates in a horizon much more beautiful than that of desolated Greece. Your apartment is more commodious than a grotto, and your sophas much softer than the turf. The undulation and the murmuring sound of your flowery meadows are more grateful to the sense than those of the billows of the Mediterranean. Your money and your own gardens can supply you with greater variety of the choicest wines and fruits than all the islands of the Archipelago could produce. Would you blend with these delights that of the Deity ? Behold on yonder hill, that small parish church encircled by aged elms. Among the young women who there assemble, under it's rustic portico, there may be undoubtedly some forlorn *Ariadne*, betrayed by a faithless lover.* She is not made of marble but of living flesh and blood ; she is not a Greek but a French-woman she is not comforted but insulted by her companions. Visit her humble abode, and sooth her anguish. Do good in this life, which is passing away with the rapidity of a torrent. Do good, not out of ostentation, and by the hands of a stranger ; but for

* There are in our own plains young females much more respectable than *Ariadne*, to whom our Historians, who make such a parade of virtue, pay no manner of attention. A person of my acquaintance observed one Sunday, at the gate of a country church, a young woman at prayer, quite alone, while they were chanting vespers within. As he remained some time in the place, he observed, for several Sundays successively, that same young woman, who never once entered the church during the service. Being mightily struck with this singularity of behaviour, he enquired into the meaning of it of some others of the female peasants, who answered him that it must be her own will merely that determined her to stop in the porch, as they knew of nothing that should prevent her going in, adding, that they had frequently urged her to accompany them, but in vain. At last, desirous of having the solution of this mystery, he addressed himself to the young woman herself whose conduct appeared to him so very extraordinary. She appeared at first somewhat disconcerted, but presently collecting courage, " Sir," said she, " I had a lover, who took advantage of my frailty. I became pregnant, and my lover falling sick, died, without making me his wife. It is my desire, that a voluntary exclusion from church for life should serve as some atonement for my fault, and as a warning to my companions "

the sake of heaven, and with your own hand. The fruit of virtue looses it's flavour when gathered by another and not yourself. Ah! if you would, in person, speak an encouraging word to her, under that load of depression; if by your sympathy you raise her in her own esteem, you will perceive how, under a sense of your goodness, her forehead is overspread with a blush, her eyes suffused with tears, her convulsive lips move without speaking, and her heart, long oppressed with shame, expand to the approach of a comforter, as to the sentiment of the DEITY. You will then perceive in the human figure, touches far beyond the reach of the chisels of Greece, and the pencil of a *Van Dyk*. The felicity of an unfortunate young woman will cost you much less than the statue of *Ariadne*: and instead of giving celebrity to the name of an artist in your hotel, for a few years, this will immortalize your own, and cause it to last long after you are gone from hence, every time she says to her companions and to her children: "It was a god came to succour me in the day of my distress."

We now proceed to trace the instinct of Divinity in our physical sensations, and shall conclude this Study by the sentiments of the soul which are purely intellectual. Thus we shall attempt to convey a faint idea of the Nature of Man.

OF PHYSICAL SENSATIONS.

All the physical sensations are in themselves so many testimonies of our misery. If Man is so sensible to the pleasure of the touch it is because he is naked all his body over. He is under the necessity, in order to clothe himself, of stripping the quadruped, the plant, and the worm. If almost all vegetables and animals are laid under contribution to supply him with food, it is because he is obliged to employ a great deal of cookery, and many combinations, in preparing his aliments. Nature has treated him with much severity; for he is the only one of animals for the wants of which she has made no immediate provision. Our philosophers have not sufficiently reflected on this perplexing distinction. How! a worm provided with it's augur or it's file; the insect enters into life in the midst of a profusion of fruit proper for his subsistence; he by and by finds in himself the means of spinning and weaving his own garment; after that, he transforms himself into a gaudy butterfly, and ranges uncontrolled, abandoning himself to all the delights of

love, and re-perpetuating his species without anxiety, and without remorse ; whereas the son of a king is born completely naked, amidst tears and groans, standing in need all his life long of the assistance of another ; under the necessity of maintaining an unremitting conflict with his own species, from within, or from without, and frequently finding in himself his most formidable enemy ! Of a truth, unless we are all only children of dust, it would be a thousand times better to enter upon existence under the form of an insect, than under that of an Emperor. But man has been abandoned to the most abject misery only that he may have uninterrupted recourse to the first of powers.

Of the Sense of Tasting.

There is no one physical sensation but what awakens in Man some sentiment of the DEITY.

To begin with the grossest of all our senses, that which relates to eating and drinking ; all Nations, in the savage state, have entertained the belief that the DIVINITY had need to support life by the same means that men do : hence in all religions the origin of sacrifice. Hence also has farther proceeded, in many Nations, the custom of placing viands on the tombs of the dead. The wives of the American savages extend this mark of solicitude even to infants who die upon the breast. After having bestowed upon them the right of sepulture, they come once a day for several weeks, and press from the nipple a few drops of milk upon the grave of the departed suckling.* This is positively affirmed by the Jesuit *Charlevoix*, who was frequently an eye-witness of the fact. Thus the sentiment of DEITY, and that of the immortality of the soul, are interwoven with our affections the most completely animal, and especially with maternal tenderness.

But Man has not satisfied himself with admitting intellectual beings to a share of his repast, and in some measure with inviting them to his table ; he has found the means of elevating himself to their rank, by the physical effects of those very aliments. It is singularly remarkable, that several savage Nations, have been discovered, who scarcely possessed industry sufficient

* See Father *Charlevoix's* Travels through America.

to procure food for themselves ; but not one who had not invented the means of getting drunk. Man is the only animal who is sensible of that pleasure. Other animals are content to remain in their sphere. Man is making perpetual efforts to get out of his. Intoxication elevates the mind. All religious festivals among Savages, and even among polished Nations, end in feasting, in which men drink till reason is gone: they begin it is true with fasting, but intoxication closes the scene. Man renounces human reason that he may excite in himself emotions that are divine. The effect of intoxication is to convey the soul into the bosom of some deity. You always hear toppers celebrating in their songs, *Bacchus*, *Mars*, *Venus*, or the God of Love. It is farther very remarkable, that men do not abandon themselves to blasphemy till they arrive at a state of intoxication ; for it is an instinct as common to the soul, to cleave to the DEITY when in it's natural state, as to abjure Him when it is corrupted by vice.

Of the Sense of Smelling.

The pleasures of smell are peculiar to Man ; for I do not comprehend under it the olfactory emanations by which he forms a judgment of his aliments, and which are common to him with most animals. Man alone is sensible to perfumes,* and employs them to give more energy to his passions. *Mahomet* said that they elevated his soul to Heaven. Whatever may be in this, the use of them has been introduced into all the religious ceremonies, and into the political assemblies, of many Nations. The *Brasilians*, as well as all the *Savages of North-America*, never deliberate on any object of importance without smoking tobacco in a calumet. It is from this practice that the calumet is become, among all those Nations, the symbol of peace, of war, of alliance, according to the accessories with which it is accompanied.

* This is, without doubt, a mistake. Not only is the sense of smelling very extensively diffused through the animal world, but I believe it is a fact, that *many* animals, besides man, enjoy the "pleasures" of smell. What other explanation than this of the attachment of the cat to the odour of valerian, and that of the *Seneca-grass* of the United States ? I could mention other instances. I believe however, that man, more than any other animal, derives pleasures from the odours of bodies.—B. S. B.

It is undoubtedly from the same custom of smoking, which was common to the Scythians, as *Herodotus* relates, that the caduceus of *Mercury*, which has a striking resemblance to the calumet of the Americans, and which appears like it to have been nothing but a pipe, became the symbol of commerce. Tobacco increases in some measure the powers of the understanding, by producing a species of intoxication in the nerves of the brain. *Lery* tells us that the Brazilians smoke tobacco till it makes them drunk. It is to be observed, that those nations have found out the most cephalic plant of the whole vegetable kingdom, and that the use of it is the most universally diffused of all those which exist on the Globe, the vine and the corn-plants not excepted. I have seen it cultivated in Finland, beyond Viburg, in about the sixty-first degree of North Latitude. The habit of using it becomes so powerful, that a person who has acquired it, will rather forego bread for a day than his tobacco. This plant is nevertheless a real poison; it affects at length the olfactory nerves, and sometimes the sight. But Man is ever disposed to impair his physical constitution, provided he can strengthen in himself the intellectual sentiment.

Of the Sense of Seeing.

Every thing that has been said, in detailing certain general Laws of Nature, harmonies, conformities, contrasts, and oppositions, refers principally to the sense of seeing. I do not speak of adaptation or correspondence; for this belongs to the sentiment of reason, and is entirely distinct from matter. The other relations are in truth founded on the reason itself of Nature, which communicates delight to us by means of colours and forms generative and generated, and inspires melancholy by those which announce decomposition and destruction. But without entering upon that vast and inexhaustible subject, I shall at present confine myself to certain optical effects, which involuntarily excite in us the sentiment of some of the attributes of Deity.

One of the most obvious causes of the pleasure which we derive from the sight of a great tree, arises from the sentiment of infinity kindled in us, by it's pyramidical form. The decrease of it's different tiers of branches and tints of verdure, which are always lighter at the extremities of the tree than in

the rest of it's foliage, give it an apparent elevation which never terminates. We experience the same sensations in the horizontal plan of landscapes, in which we frequently perceive several successive hilly elevations flying away one behind the other, till the last melt away into the Heavens. Nature produces the same effect in vast plains, by means of the vapours which rise from the banks of the lakes, or from the channels of the brooks and rivers that wander through them; their contours are multiplied in proportion to the extent of the plain, as I have many a time remarked. Those vapours present themselves on different plans; sometimes they stand still, like curtains drawn along the skirts of the forests; sometimes they mount into columns over the brooks which meander through the meadows: sometimes they are quite gray; at other times they are illuminated and penetrated by the rays of the Sun. Under all these aspects they display to us, if I may venture to use the expression, several perspectives of infinity in infinity itself.

I say nothing of the delightful spectacle which the Heavens sometimes present to us in the disposition of the clouds. I do not know of any Philosopher who has so much as suspected that their beauties were subjected to Law. One thing is certain, namely, that no one animal which lives in the light is insensible to their effects. I have spoken in another place somewhat of their characters of amability or terror, which are the same with those of amiable or dangerous animals and vegetables, conformable to those of the days and of the seasons which they announce. The Laws of them which I have sketched, will suggest delicious subjects of meditation to any person disposed to study them, excepting those who are determined to apply the mechanical medium of barometers and thermometers. These instruments are good for nothing but the regulation of the atmosphere of our chambers. They too frequently conceal from us the action of Nature; they announce, in most instances, the same temperatures in the days which set the birds a-singing, and in those which reduce them to silence. The harmonies of Heaven are to be felt only by the heart of Man. All Nations, struck by their ineffable language, raise their hands and their eyes to Heaven in the involuntary emotions of joy or of grief.

Reason however tells them that God is every where. How comes it that no one stretches out his arms toward the Earth, or to the Horizon, in the attitude of invocation? Whence comes the sentiment which whispers to them, *God is in Heaven?* Is it because Heaven is the place where light dwells? Is it because the light itself which discloses all objects to us, not being like our terrestrial substances liable to be divided, corrupted, destroyed, and confined, seems to present something celestial in it's substance?

It is to the sentiment of infinity which the sight of the Heavens inspires, that we must ascribe the taste of all nations for building temples on the summit of a mountain, and the invincible propensity which the Jews felt, like other Nations, to worship upon high places. There is not a mountain all over the islands of the Archipelago but what has it's church; nor a hill in China but what has it's pagoda. If, as some Philosophers pretend, we never form a judgment of the nature of things but from the mechanical results of a comparison with ourselves, the elevation of mountains ought to humiliate our insignificance. But the truth is that these sublime objects, by elevating us toward Heaven, elevate thither the soul of Man by the sentiment of infinity; and disjoining us from things terrestrial, waft us to the enjoyment of beauties of much longer duration.

The works of Nature frequently present to us several kinds of infinity at once; thus, for example, a great tree, the trunk of which is cavernous and covered with moss, conveys to us the sentiment of infinity as to time, as well as that of infinity in point of elevation. It exhibits a monument of ages when we did not exist. If to this is added infinity of extension, as when we perceive through it's solemn branches objects prodigiously remote, our veneration increases. Go on, and add to all these, the different ridges of it's mass, in contrast with the profundity of the valleys, and with the level of the plains; it's venerable half-lights, which oppose themselves, and play with the azure of the Heavens; and the sentiment of our own wretchedness, which it relieves, by the ideas of the protection which it affords in the thickness of it's trunk immoveable as the rock, and in it's august summit agitated by the winds, the majestic murmurs of which seem to sympathize with our distress: a tree, with all

these harmonies, seems to inspire an inexpressible religious awe. *Pliny* says, in conformity to this idea, that the trees were the first temples of the Gods.

The sublime impression which they produce becomes still more profound, when they recal to us some sentiment of virtue, such as the recollection of the great men who planted them, or of those whose tombs they shade. Of this kind were the oaks of Iulus at Troy. It is from an effect of this sentiment that the mountains of Greece and Italy appear to us more respectable than those of the rest of Europe, though they are of no higher antiquity on the Globe, because their monuments, in ruins as they are, call to our remembrance the virtues of the persons who inhabited them. But this subject belongs not to the present article.

In general, the different sensations of infinity increase by the contrasts of the physical objects which produce them. Our Painters are not sufficiently attentive to the choice of those which they introduce into the fore-ground of their pictures. They would give a much more powerful effect to their background scenery, if they opposed to it the frontispiece, not only in colours and forms as they sometimes do, but in nature. Thus, for example, if the Artist wished to communicate an affecting interest to a cheerful and smiling landscape, he would do well to present it through a magnificent triumphal arch, crumbling into ruin by length of time. On the contrary, a city filled with Tuscan and Egyptian monuments would have a still greater air of antiquity, when viewed from under a bower of verdure and flowers. We ought to imitate Nature, who never produces the most lovely plants in all their beauty, such as mosses, violets, and roses, but at the foot of rustic rocks.

Not but that consonances likewise produce a very powerful effect, especially when they seem to unite objects which are distinct from each other. It is thus, for instance, that the cupola of the College of the Four Nations presents a magnificent point of view, when seen from the middle of the court of the Louvre, through the arcade of that palace which is opposite, for then you view it complete, with a portion of the Heaven under the arch, as if it were a part of the Louvre. But in this very consonance, which gives such an extent to our vision, there

is likewise a contrast in the concave form of the arcade, with the convex form of the cupola.

The great art of moving is to oppose sensible objects to intellectual. The soul in that case takes a daring flight. It soars from the visible to the invisible, and enjoys, if I may be allowed the expression, in it's own way, by extending itself into the unbounded fields of sentiment and of intelligence. Among certain Tartar tribes, when a great man dies, his groom, after the interment, leads out the horse which his master was accustomed to ride, places the clothes which he wore on the horse's back, and walks him, in profound silence, before the assembly, who by that spectacle are melted into tears.

When the suppressed circumstances multiply and unite themselves to some virtuous affection, the emotions of the soul are greatly heightened. Thus when, in the *Æneid*, *Iulus* is promising to make presents to *Nisus* and *Euryalus*, who are going in quest of his father to *Palenteum*, he says to *Nisus* :

Bina dabo argento perfecta atque aspera signis
Procula, divecta genitor quæ cepit Arisba ;
Et tripodes geminos, auri, duo magna talenta,
Cratera antiquum quem dat Sidonia Dido.*

Æneid. Lib. ix. v. 263.

“ I will present you with two silver cups of exquisite workmanship, with curious figures in alto-relievo. They became my father's property at the capture of Arisba. To these I will add a pair of twin tripods ; two talents of massy gold ; and an ancient goblet, a token of affection from Queen *Dido*.”

He promises to the two youthful friends, united to each other in the tenderest bonds, double presents, two cups, two tripods to serve as stands for them, after the manner of the ancients, two talents of gold to replenish them with wine, but only one bowl from which they might drink together. And then, what a bowl ! he boasts neither of the materials of which it is con-

* Two silver cups, emboss'd with nicest art,
I'll give, of warlike spoils my father's part,
When fam'd Arisba fell ; two tripods old ;
A double talent, too, of purest gold ;
Sidonian Dido's gift shall crown the rest,
A bowl antique, of generous love the test

posed, nor of the workmanship, as in the case of the other presents ; he connects it with moral qualities infinitely more interesting to the heart of friendship. It is antique ; it was not the prize of violence but the gift of love. *Iulus* no doubt received it as a mark of affection from *Dido*, when she considered herself to be the wife of *Æneas*.

In all the scenes of passion where the intention is to produce strong emotions, the more that the principal object is circumscribed, the more extended is the intellectual sentiment resulting from it. Several reasons might be assigned for this, the most important of which is, that the accessory contrasts, as those of littleness and greatness, of weakness and strength, of finite and infinite, concur in heightening the contrast of the subject. When *Poussin* conceived the idea of a picture of the universal deluge, he confined it to the representation of a single family. There you see an old man on horseback, on the point of drowning ; and in a boat, a man, perhaps his son, presents to his wife, who has made shift to scramble up a rock, a little child dressed in a red petticoat, who, on it's part, is making every effort with it's little feet to get upon the rock. The background of the landscape is frightful from it's black melancholy. The herbage and the trees are soaked in water, the Earth itself is penetrated by it, which is rendered visible by that long serpent in eager haste to quit it's hole. The torrents are gushing down on every side ; the Sun appears in the Heavens like an eye thrust out of it's socket : but the most powerful interest in the piece bears upon the feeblest object : a father and a mother, ready themselves to perish, are wholly engrossed in the preservation of their infant. Every other feeling is extinguished on the Earth, but maternal tenderness is still alive. The human race is destroyed because of it's crimes, and innocence is going to be involved in the punishment. These unrestrained torrents that deluged Earth, that lurid Atmosphere, that extinguished Sun, those desolated solitudes, that fugitive family, all the effects of this universal ruin of the World, are wholly concentrated in an infant. There is no one, however, who on viewing the small group of personages which surround it, would not exclaim : " There's the Universal Deluge !" Such is the nature of the human soul : so far from being material it lays hold only of cor-

respondencies. The less your display to it physical objects the more you awaken in it intellectual feelings.

Of the sense of Hearing.

Plato calls hearing and seeing the senses of the soul. I suppose he qualifies them particularly by this name, because vision is affected by light, which is not properly speaking a substance; and hearing by the modulations of the air, which are not of themselves bodies. Besides, these two senses convey to us only the sentiment of correspondencies and harmonies, without involving us in matter as smelling does, which is affected only by the emanations from bodies; tasting by their fluidity; and touching by their solidity, by their softness, by their heat, and by their other physical qualities. Though hearing and seeing be the direct senses of the soul, we ought not however thence to conclude, that a man born deaf and blind must be an idiot, as some have pretended. The soul sees and hears by all the senses. This has been demonstrated in the case of the blind Princes of Persia, whose fingers, according to *Chardin's* report, are so astonishingly intelligent, that they can trace and calculate all the figures of Geometry on tables. Such are likewise the deaf and the dumb, whom the *Abbe de l'Epee* is teaching to converse together.

I have no occasion to be diffuse on the subject of the intellectual relations of hearing. This sense is the immediate organ of intelligence; it is that which is adapted to the reception of speech, a faculty peculiar to man, and which, by it's infinite modulations, is the expression of all the correspondencies of Nature, and of all the feelings of the human heart. But there is another language which seems to appertain still more particularly to this first principle of ourselves, to which we have given the name of *sentiment*: I mean music.

I shall not dwell on the incomprehensible power which it possesses of rousing and quieting the passions, in a manner independent of reason, and of kindling sublime affections disengaged from intellectual perception: it's effects are sufficiently known. I shall only observe, that it is so natural to Man, that the first prayers addressed to the DEITY, and the original Laws among all Nations, were set to music. Man loses a taste for it only in polished society, the very languages of which at length lose their accentuation. The fact is, that a multitude of social

relations destroy in a state of refinement the correspondencies of Nature. In that state we reason much but scarcely feel any longer.

The AUTHOR of Nature has deemed the harmony of sounds to be so necessary to Man, that there is not a situation upon the Earth but what has it's singing bird. The linnet of the Canaries usually frequents, in those islands, the flinty gutters of the mountains. The goldfinch delights in sandy downs, the lark in the meadows, the nightingale in woods by the side of a brook, the bullfinch, whose note is so sweet, in the white thorn: the thrush, the yellow-hammer, the greenfinch, and all other singing birds, have their favourite post. It is very remarkable that all over the Globe they discover an instinct which attracts them to the habitation of Man. If there be but a single hut in a forest, all the song-birds of the vicinity come and settle around it. Nay, none are to be found except in places which are inhabited. I have travelled more than six hundred leagues through the forests of Russia, but never met with small birds, except in the neighbourhood of villages. On making the tour of the fortified places of Russian Finland, with the General Officers of the Corps of Engineers in which I served, we travelled sometimes at the rate of twenty leagues a day, without seeing on the road either village or bird. But when we perceived the sparrows fluttering about we concluded we must be drawing near some inhabited place. In this indication we were never once deceived. I relate it with the more satisfaction that it may sometimes be of service to persons who have lost their way in the woods.

Carcillaso de la Vega informs us that his father having been detached from Peru, with a company of Spaniards, to make discoveries beyond the Cordeliers, was in danger of perishing with hunger in the midst of their uninhabited valleys and quagmires. He never could have got out had he not perceived in the air a flight of paroquets, which suggested a hope that there might be some place of habitation at no great distance. He directed his march to that point of the compass which the paroquets had pursued, and arrived after incredible fatigue at a colony of Indians, who cultivated fields of maize.

It is to be observed, that Nature has not given a musical voice to any one sea or river bird, because it would have been

lost in the noise of the waters, and because the human ear could not have enjoyed it at the distance which they are destined to live from the land. If there are swans which sing, as has been alleged by some, their song must consist but of very few modulations, with some resemblance to the uncouth sounds uttered by the duck and the goose. That of the wild swan which came lately and settled at Chantilly has only four or five notes. Aquatic birds have shrill and piercing cries, by means of which they can make themselves heard in the regions of wind and tempests where they inhabit, and are in perfect correspondence with their noisy situations, and with their melancholy solitudes.*

The melodies of song-birds have similar relations to the sites which they occupy, and even to the distances at which they live from our habitations. The lark, who nestles among our corn, and delights in soaring perpendicularly till we lose sight of him, makes his voice to be heard in the air after he is no longer perceptible to the eye. The swallow, who grazes the walls of our houses as he flies, and reposes on our chimneys, has a small gentle chirping voice which does not stun the ear, as that of the songsters of the grove would do; but the solitary nightingale makes himself heard at a distance of more than half a league. He mistrusts the vicinity of man; and nevertheless always places himself within sight of his habitation, and within the reach of his ear. He chooses, for this effect, places which are the best conductors of sound, in order that their echoing may give more action to his voice. Having stationed himself in his orchestra, he warbles an unknown drama, which has it's exordium, it's exposition, it's recitative, it's catastrophe, intermingled sometimes with the most extravagant bursts of joy, some-

* "The notes of all sea-fowl," says Mr. Pennant, "are most harsh and inharmonious. I have often rested under rocks like those of Flamborough-Head," attentive to the various sounds over my head; which, mixed with the deep roar of the waves slowly swelling, and retiring from the vast caverns beneath, have produced a fine effect. The sharp voice of the gulls, the frequent chatter of the guillemots, the loud notes of the auks, the scream of the herons, together with the deep periodical croak of the cormorants, which seems as a bass to the rest, have often furnished me with a concert, which, joined to the wild scenery surrounding me, afforded in an high degree that species of pleasure which results from the novelty and the gloomy majesty of the entertainment." Introduction to the Arctic Zoology: page xv.—B. S. B.

times with bitter and plaintive notes of recollection, which he expresses by long and deep sighs. He raises his song at the commencement of that season which renews the face of Nature, and seems to present Man with a representation of the restless career which lies before him.

Every bird has a voice adapted to the times and stations of its destination, and relative to the wants of Man. The loud clarion of the cock calls him up to labour at the dawn of day. The brisk and lively song of the lark, in the meadow, invites the swains and shepherdesses to the dance; the voracious thrush, which appears only in Autumn, summons the rustic vine-dresser to the vintage. Man alone, on his part, is attentive to the accents of the feathered race. Never will the deer, who sheds tears copiously over his own misfortunes, sigh over those of the complaining Philomel. Never did the laborious ox when led to the slaughter after all his painful services, turn his head toward her, and say: "Solitary bird, behold in what manner Man rewards his servants!"

Nature has refused these distractions, and these consonances of fortune over volatile beings, in order that our soul, susceptible as it is of every woe, finding every where occasions of extending that susceptibility, might every where be enabled to alleviate the pressure. She has rendered insensible bodies themselves capable of these communications. She presents to us frequently in the midst of scenes which pain the eye, other scenes which delight the ear, and soothe the mind with interesting recollections. It is thus that from the bosom of forests she transports us to the brink of the waters, by the rustling of the aspens and of the poplars. At other times she conveys to us, when we are by the side of the brook, the noise of the Sea, and the manœuvres of navigation, in the murmuring of reeds shaken by the wind. When she can no longer seduce our reason by foreign imagery, she lulls it to rest by the charm of sentiment: she calls forth from the bosom of the forests, of the meadows, and of the valleys, sounds ineffable, which excite in us pleasing reveries, and plunge us into profound sleep.

Of the Sense of Touching.

I shall make but a few reflections on the sense of touching. It is the most obtuse of all our senses, and nevertheless it is in

some sort the seal of our intelligence. To no purpose is an object exposed to the examination of the eye, in every possible position ; we cannot be persuaded that we know it, unless we are permitted to put it to the touch. This instinct proceeds perhaps from our weakness, which seeks in those approximations points of protection. Whatever may be in this, the sense in question, blunt as it is, may be made the channel of communicating intelligence, as is evident from the example adduced by *Chardin*, of the blind men of Persia, who traced geometrical figures with their fingers, and formed a very accurate judgment of the goodness of a watch by handling the parts of the movement.

Wise Nature has placed the principal organs of this sense, which is diffused over the whole surface of our skin, in our hands and feet, which are the members the best adapted to judge of the quality of bodies. But in order that they might not be exposed to the loss of their sensibility by frequent shocks, she has bestowed on them a great degree of pliancy, by dividing them into several fingers and toes, and these again into several joints ; farther, she has furnished them, on the points of contact, with elastic half-pincers, which present at once resistance in their callous and prominent parts, and an exquisite sensibility in the retreating.

It is matter of astonishment to me, however, that Nature should have diffused the sense of touching over the whole surface of the human body, which becomes thence exposed to variety of suffering, while no considerable benefit seems to result from it. Man is the only animal laid under the necessity of clothing himself. There are indeed some insects which make cases for themselves, such as the moth ; but they are produced in places where their clothing is, if I may say so, ready made. This necessity, which is become one of the most inexhaustible sources of human vanity, is in my opinion one of the most humiliating proofs of our wretchedness. Man is the only being who is ashamed of appearing naked. This is a feeling of which I do not discern the reason in Nature, nor the similitude in the instinct of other animals. Besides, independently of all sense of shame, he is constrained by powerful necessity to clothe himself, in every variety of climate.

Certain Philosophers, wrapped up in good warm cloaks, and who never stir beyond the precincts of our great cities, have figured to themselves a natural Man on the Earth, like a statue of bronze in the middle of one of our squares. But to say nothing of the innumerable inconveniencies which must in such a state oppress his miserable existence from without, as the cold, the heat, the wind, the rain, I shall insist only on one inconvenience, which is but slightly felt in our commodious apartments, though it would be absolutely insupportable to a naked man, in the most genial of temperatures, I mean the flies. I shall quote, to this purpose, the testimony of a man whose skin ought to have been proof against this attack: it is that of the free-booter *Ravenau du Lussan*, who in the year 1688, crossed the isthmus of Panama, on his return from the South Seas. Hear what he says, speaking of the Indians of Cape de Gracias a Dios: “When they are overtaken with an inclination to go to sleep, they dig a hole in the sand, in which they lay themselves along, and then cover themselves all over with the sand which they had dug out; this they do to shelter themselves from the attack of the musquitos, with which the air is so frequently loaded. They are a kind of little flies that are rather felt than seen, and are armed with a sting so keen, and so venomous, that when they fix on any one, they seem to dart a shaft of fire into the blood.

“The poor wretches are so grievously tormented with those formidable insects, when it does not blow, that they become like lepers; and I can affirm it as a serious truth, for I know it from my own experience, that it is no slight evil to be attacked by them; for besides their preventing all rest in the night-time, when we were obliged to trudge along with our backs naked for want of shirts, the unceasing persecution of those merciless little animals drove us almost to madness and despair.”*

It is, I am disposed to believe, on account of the troublesomeness of the flies, which are very common, and very necessary, in the marshy and humid places of hot countries, that Nature has placed but few quadrupeds with hair on their shores, but quadrupeds with scales, as the tatou, the armadillo, the tortoise,

* Journal of a Voyage to the South Sea in 1688

the lizard, the crocodile, the cayman, the land-crab, bernard-the-hermit, and other scaly reptiles, such as serpents, upon which the flies have not the means of fastening. It is perhaps for this reason likewise that hogs and wild-boars, which take pleasure in frequenting such places, are furnished with hair, long, stiff, and bristly, which keep volatile insects at a distance.

Once more, Nature has not employed, in this respect, any one precaution in behalf of Man. Of a truth, on contemplating the beauty of his forms, and his complete nakedness, it is impossible for me not to admit the ancient tradition of our origin. Nature, in placing him on the Earth, said to him: "Go, degraded creature, animal destitute of clothing, intelligence without light; go and provide for thy own wants; it shall not be in thy power to enlighten thy blinded reason, but by directing it continually toward Heaven, nor to sustain thy miserable life, without the assistance of beings like thyself." And thus out of the misery of Man sprung up the two commandments of the Law.

OF THE SENTIMENTS OF THE SOUL.

And first, of Mental Affections.

I shall speak of mental affections, chiefly in the view of distinguishing them from the sentiments of the soul: they differ essentially from each other. For example, the pleasure which comedy bestows is widely different from that of which tragedy is the source. The emotion which excites laughter is an affection of the mind, or of human reason; that which dissolves us into tears is a sentiment of the soul. Not that I would make of the mind and of the soul two powers of a different nature; but it seems to me, as has been already said, that the one is to the other what sight is to the body; mind is a faculty, and soul is the principle of it: the soul is, if I may venture thus to express myself, the body of our intelligence. I consider the mind then as an intellectual eye, to which may be referred the other faculties of the understanding, as the *imagination*, which apprehends things future; *memory*, which contemplates things that are past; and *judgment*, which discerns their correspondencies. The impression made upon us by these different acts of vision, sometimes excites in us a sentiment which is denominated *evi-*

dence; and in that case, this last perception belongs immediately to the soul; of this we are made sensible by the delicious emotion which it suddenly excites in us; but, raised to that, it is no longer in the province of mind; because when we begin to feel we cease to reason; it is no longer vision, it is enjoyment.

As our education and our manners direct us toward our personal interest, hence it comes to pass, that the mind employs itself only about social conformities, and that reason, after all, is nothing more than the interest of our passions; but the soul, left to itself, is incessantly pursuing the conformities of Nature, and our sentiment is always the interest of Mankind.

Thus, I repeat it, mind is the perception of the Laws of Society, and sentiment is the perception of the Laws of Nature. Those who display to us the conformities of Society, such as comic Writers, Satirists, Epigrammatists, and even the greatest part of Moralists, are men of wit: such were the *Abbe de Choisy*, *La Bruyere*, *St. Evremont*, and the like. Those who discover to us the conformities of Nature, such as tragic and other Poets of sensibility, the Inventors of arts, great Philosophers, are men of genius: such were *Shakespeare*, *Corneille*, *Racine*, *Newton*, *Marcus Aurelius*, *Montesquieu*, *La Fontaine*, *Fenelon*, *J. J. Rousseau*. The first class belong to one age, to one season, to one nation, to one junto; the others to posterity and to Mankind.

We shall be still more sensible of the difference which subsists between mind and soul, by tracing their affections to opposite progresses. As often, for example, as the perceptions of the mind are carried up to evidence, they are exalted into a source of exquisite pleasure, independently of every particular relation of interest; because, as has been said, they awaken a feeling within us. But when we go about to analyze our feelings, and refer them to the examination of the mind, or reasoning power, the sublime emotions which they excited vanish away; for in this case we do not fail to refer them to some accommodation of society, of fortune, of system, or of some other personal interest, whereof our reason is composed. Thus, in the first case, we change our copper into gold; and in the second our gold into copper.

Again, nothing can be less adapted, at the long-run, to the study of Nature, than the reasoning powers of Man; for though they may catch here and there some natural conformities, they

never pursue the chain to any great length : besides, there is a much greater number which the mind does not perceive, because it always brings back every thing to itself, and to the little social or scientific order within which it is circumscribed. Thus, for example, if it takes a glimpse of the celestial spheres, it will refer the formation of them to the labour of a glass-house ; and if it admits the existence of a creating Power, it will represent him as a mechanic out of employment, amusing himself with making globes, merely to have the pleasure of seeing them turn round. It will conclude, from it's own disorder, that there is no such thing as order in nature ; from it's own immorality, that there is no morality. As it refers every thing to it's own reason, and seeing no reason for existence when it shall be no longer on the Earth, it thence concludes that in fact it shall not in that case exist. To be consistent, it ought equally to conclude on the same principle that it does not exist now ; for it certainly can discover neither in itself nor in any thing around an actual reason for it's existence.

We are convinced of our existence by a power greatly superior to our mind, which is sentiment, or intellectual feeling. We are going to carry this natural instinct along with us into our researches respecting the existence of the DEITY, and the immortality of the soul ; subjects on which our versatile reason has so frequently engaged, sometimes on this, sometimes on the other side of the question. Though our insufficiency be too great to admit of launching far into this unbounded career, we presume to hope that our perceptions, nay our very mistakes, may encourage men of genius to enter upon it. These sublime and eternal truths seem to us so deeply imprinted on the human heart, as to appear themselves the principles of our intellectual feeling, and to manifest themselves in our most ordinary affections, as in the wildest excesses of our passions.

OF THE SENTIMENTS OF INNOCENCE.

The sentiment of innocence exalts us toward the DEITY, and prompts us to virtuous deeds. The Greeks and Romans employed little children to sing in their religious festivals, and to present their offerings at the altar, in the view of rendering the Gods propitious to their Country by the spectacle of infant innocence. The sight of infancy calls men back to the sentiments

of Nature. When *Cato* of Utica had formed the resolution to put himself to death, his friends and servants concealed his sword ; and upon his demanding it with expressions of violent indignation, they delivered it to him by the hands of a child : but the corruption of the age in which he lived had stifled in his heart the sentiment which innocence ought to have excited.

JESUS CHRIST recommends to us to become as little children ; We call them innocents, *non nocentes*, because they have never injured any one. But notwithstanding the claims of their tender age, and the authority of the Christian Religion, To what barbarous education are they they not abandoned ?

Of Pity.

The sentiment of innocence is the native source of compassion ; hence we are more deeply affected by the sufferings of a child than by those of an old man. The reason is not, as certain Philosophers pretend, because the resources and hopes of the child are inferior ; for they are in truth greater than those of the old man, who is frequently infirm and hastening to dissolution, whereas the child is entering into life ; but the child has never offended ; he is innocent. This sentiment extends even to animals, which in many cases excite our sympathy more than rational creatures do, from this very consideration, that they are harmless. This accounts for the idea of the good *La Fontaine*, in describing the Deluge, in his fable of *Baucis* and *Philemon*.

.....Tout disparut sur l'heure.
Les vieillards déploroient ces sévères destins :
Les animaux périr ! Car encor les humains,
Tous avoient du tomber sous les célestes armes,
Baucis en répandit en secret quelques larmes.

All disappear'd in that tremendous hour.
Age felt the weight of Heaven's insulted power :
On guilty Man the stroke with justice fell,
But harmless brutes !—the fierceness who can tell
Of wrath divine ?—At thought of this, some tears
Stole down the cheeks of *Baucis*.....

Thus the sentiment of innocence develops, in the heart of Man, a divine character, which is that of generosity. It bears not on the calamity abstractedly considered, but on a moral

quality, which it discerns in the unfortunate being who is the object of it. It derives increase from the view of innocence, and sometimes still more from that of repentance. Man alone of all animals is susceptible of it; and this not by a secret retrospect to himself, as some enemies of the Human Race have pretended; for were that the case, on stating a comparison between a child and an old man, both of them unfortunate, we ought to be more affected by the misery of the old man, considering that we are removing from the wretchedness of childhood, and drawing nearer to that of old age: the contrary however takes place, in virtue of the moral sentiment which I have alleged.

When an old man is virtuous, the moral sentiment of his distress is excited in us with redoubled force; this is an evident proof that pity in Man is by no means an animal affection. The sight of a *Belisarius* is accordingly a most affecting object. If you heighten it by the introduction of a child holding out his little hand to receive the alms bestowed on that illustrious blind beggar, the impression of pity is still more powerful. But let me put a sentimental case. Suppose you had fallen in with *Belisarius* soliciting charity, on the one hand, and on the other, an orphan child blind and wretched, and that you had but one crown, without the possibility of dividing it, To whether of the two would you have given it?

If on reflection you find that the eminent services rendered by *Belisarius* to his ungrateful Country, have inclined the balance of sentiment too decidedly in his favour, suppose the child overwhelmed with the woes of *Belisarius*, and at the same time possessing some of his virtues, such as having his eyes put out by his parents, and nevertheless continuing to beg alms for their relief;* there would in my opinion be no room for hesitation, provided a man felt only: for if you reason, the case is entirely altered; the talents, the victories, the renown of the Grecian General, would presently absorb the calamities of an obscure

* The rector of a country village, in the vicinity of Paris, not far from Dravet, underwent in his infancy a piece of inhumanity not less barbarous, from the hands of his parents. He suffered castration from his own father, who was by profession a surgeon: he nevertheless supported that unnatural parent in his old age. I believe both father and son are still in life.

child. Reason will recall you to the political interest, to the human.

The sentiment of innocence is a ray of the Divinity. It invests the unfortunate person with a celestial radiance which falls on the human heart, and recoils, kindling it into generosity, that other flame of divine original. It alone renders us sensible to the distress of virtue, by representing it to us as incapable of doing harm ; for otherwise we might be induced to consider it as sufficient for itself. In this case it would excite rather admiration than pity.

Of the Love of Country.

This sentiment is, still farther, the source of love of Country, because it brings to our recollection the gentle and pure affections of our earlier years. It increases with extention, and expands with the progress of time, as a sentiment of a celestial and immortal nature. They have in Switzerland an ancient musical air, and extremely simple, called the *rans des vaches*. The music of this air produces an effect so powerful, that it was found necessary to prohibit the playing of it, in Holland and in France, before the Swiss soldiers, because it set them all ad-deserting one after another. I imagine that the *rans des vaches* must imitate the lowing and bleating of the cattle, the repercussion of the echos, and other associations, which made the blood boil in the veins of those poor soldiers, by recalling to their memory, the valleys, the lakes, the mountains of their Country,* and at the same time the companions of their early life, their first loves, the recollection of their indulgent grand-fathers, and the like.

* I have been told that *Poutaveri*, the Indian of Otaheité, who was some years ago brought to Paris, on seeing, in the Royal Garden, the paper-mulberry-tree, the bark of which is in that island manufactured into cloth, the tear started to his eye, and clasping it in his arms, he exclaimed : *Ah ! tree of my country !* I could wish it were put to the trial, whether on presenting to a foreign bird, say a paroquet, a fruit of it's country, which it had not seen for a considerable time, it would express some extraordinary emotion. Though physical sensations attach us so strongly to Country, moral sentiments alone can give them a vehement intensity. Time, which blunts the former, gives only a keener edge to the latter. For this reason it is that veneration for a monument is always in proportion to it's antiquity, or to it's distance ; this explains that expression of *Tacitus* : *Major è longinque reverentia* . distance increases reverence.

The love of Country seems to strengthen in proportion as it is innocent and unhappy. For this reason Savages are fonder of their Country than polished Nations are; and those who inhabit regions rough and wild, such as mountaineers, than those who live in fertile countries and fine climates. Never could the Court of Russia prevail upon a single Samoiède to leave the shores of the Frozen Ocean, and settle at Petersburg. Some Greenlanders were brought in the course of the last century to the Court of Copenhagen, where they were entertained with a profusion of kindness, but soon fretted themselves to death. Several of them were drowned in attempting to return to their country in an open boat. They beheld all the magnificence of the Court of Denmark with extreme indifference; but there was one in particular, whom they observed to weep every time he saw a woman with a child in her arms; hence they conjectured that this unfortunate man was a father. The gentleness of domestic education, undoubtedly, thus powerfully attaches those poor people to the place of their birth. It was this which inspired the Greeks and Romans with so much courage in the defence of their Country. The sentiment of innocence strengthens the love of it, because it brings back all the affections of early life, pure, sacred, and incorruptible. *Virgil* was well acquainted with the effect of this sentiment, when he puts into the mouth of *Nisus*, who was dissuading *Euryalus* from undertaking a nocturnal expedition fraught with danger, those affecting words:

Te superesse velim : tua vita dignior ætas

If thou survive me, I shall die content :

Thy tender age deserves the longer life

But among Nations with whom infancy is rendered miserable, and is corrupted by irksome, ferocious, and unnatural education, there is no more love of Country than there is of innocence. This is one of the causes which sends so many Europeans a-rambling over the World, and which accounts for our having so few modern monuments in Europe, because the next generation never fails to destroy the monuments of that which preceded it. This is the reason that our books, our fashions, our customs, our ceremonies, and our languages, become obsolete so soon, and are entirely different this age from what they

were in the last; whereas all these particulars continue the same among the sedentary Nations of Asia, for a long series of ages together; because children brought up in Asia, in the habitation of their parents, and treated with much gentleness, remain attached to the establishments of their ancestors out of gratitude to their memory, and to the places of their birth from the recollection of their happiness and innocence.

OF THE SENTIMENT OF ADMIRATION.

The sentiment of admiration transports us immediately into the bosom of DEITY. If it is excited in us by an object which inspires delight, we convey ourselves thither as to the source of joy; if terror is roused, we flee thither for refuge. In either case, Admiration exclaims in these words, *Ah, my God!* This is, we are told, the effect of education merely, in the course of which frequent mention is made of the name of GOD; but mention is still more frequently made of our father, of the king, of a protector, of a celebrated literary character. How comes it then that when we feel ourselves standing in need of support, in such unexpected concussions we never exclaim, *Ah, my King!* or, if Science were concerned, *Ah, Newton!*

It is certain that if the name of GOD be frequently mentioned to us in the progress of our education, the idea of it is quickly effaced in the usual train of the affairs of this World; why then have we recourse to it in extraordinary emergencies? This sentiment of Nature is common to all Nations, many of whom give no theological instruction to their children. I have remarked it in the Negroes of the coast of Guinea, of Madagascar, of Cafferie, and Mosambique, among the Tartars, and the Indians of the Malabar coast; in a word among men of every quarter of the World. I never saw a single one who, under the extraordinary emotions of surprize or of admiration, did not make, in his own language, the same exclamation which we do, and who did not lift up his hands and his eyes to Heaven.

Of the Marvellous.

The sentiment of admiration is the source of the instinct which men have in every age discovered for the marvellous. We are hunting after it continually, and every where, and we

diffuse it principally over the commencement and the close of human life : hence it is that the cradles and the tombs of so great a part of Mankind have been enveloped in fiction. It is the perennial source of our curiosity ; it discloses itself from early infancy, and is long the companion of innocence. Whence could children derive the taste for the marvellous ? They must have Fairy-tales ; and men must have epic poems and operas. It is the marvellous which constitutes one of the grand charms of the antique statues of Greece and Rome, representing heroes or gods, and which contributes more than is generally imagined to our delight, in the perusal of the ancient History of those Countries. It is one of the natural reasons which may be produced to the President *Henault*, who expresses his astonishment that we should be more enamoured of ancient History than of modern, especially than that of our own country. The truth is, independently of the patriotic sentiments which serve at least as a pretext to the intrigues of the great men of Greece and Rome, and which were so entirely unknown to ours, that they frequently embroiled their country in maintaining the interests of a particular house, and sometimes in asserting the honor of precedency, or of sitting on a joint-stool ; there is a marvellous in the religion of the Ancients, which consoles and elevates human nature, whereas that of the Gauls terrifies and debases it. The gods of the Greeks and the Romans were patriots, like their great men. *Minerva* had given them the olive, *Neptune* the horse. Those deities protected the city and the people. But those of the ancient Gauls were tyrants, like their Barons ; they afforded protection only to the Druids. They must be glutted with human sacrifices. In a word, this religion was so inhuman, that two successive Roman Emperors, according to the testimony of *Suetonius* and *Pliny*, commanded it to be abolished. I say nothing of the modern interests of our History ; but sure I am that the relations of our politicks will never replace in it, to the heart of Man, those of the Divinity.

I must observe that as admiration is an involuntary movement of the soul toward Deity, and is of consequence sublime, several modern Authors have strained to multiply this kind of beauty in their productions, by an accumulation of surprising incidents ; but Nature employs them sparingly in her's, because Man is incapable of frequently undergoing concussions so vio-

lent. She discloses to us by little and little the light of the Sun, the expansion of flowers, the formation of fruits. She gradually introduces our enjoyments by a long series of harmonies ; she treats us as human beings ; that is as machines feeble and easily deranged ; she veils Deity from our view that we may be able to support his approach.

The Pleasure of Mystery.

This is the reason that mystery possesses so many charms. Pictures placed in the full glare of light, avenues in straight lines, roses fully blown, women in gaudy apparel, are far from being the objects which please us most. But shady valleys, paths winding about through the forests, flowers scarcely half-opened, and timid shepherdesses, excite in us the sweetest and the most lasting emotions. The loveliness and respectability of objects are increased by their mysteriousness. Sometimes it is that of antiquity which renders so many monuments venerable in our eyes ; sometimes it is that of distance, which diffuses so many charms over objects in the Horizon ; sometimes it is that of names. Hence the Sciences which retain the Greek names, though they frequently denote only the most ordinary things, have a more imposing air of respect than those which have only modern names, though these may in many cases be more ingenious and more useful. Hence, for example, the construction of ships, and the art of navigation, are more lightly prized by our modern *literati*, than several other physical sciences of the most frivolous nature, but which are dignified by Greek names. Admiration, accordingly, is not a relation of the understanding, or a perception of our reason, but a sentiment of the soul, which arises in us from a certain undescribable instinct of Deity, at sight of extraordinary objects, and from the very mysteriousness in which they are involved. This is so indubitably certain, that admiration is destroyed by the science which enlightens us. If I exhibit to a savage an eolipile darting out a stream of inflamed spirit of wine, I throw him into an ecstasy of admiration ; he feels himself disposed to fall down and worship the machine ; he venerates me as the God of Fire, as long as he comprehends it not ; but no sooner do I explain to him

the nature of the process, than his admiration ceases and he looks upon me as a cheat.*

The Pleasures of Ignorance.

From an effect of these ineffable sentiments, and of those universal instincts of Deity, it is, that ignorance is become the inexhaustible source of delight to Man. We must take care not to confound, as all our Moralists do, ignorance and error. Ignorance is the work of Nature, and in many cases a blessing to man; whereas error is frequently the fruit of our pretended human Sciences, and is always an evil. Let our political Writers say what they will, while they boast of our wonderful progress in knowledge, and oppose to it the barbarism of past ages, it was not ignorance which then set all Europe on fire, and inundated it with blood, in settling religious disputations. A race of ignorants would have kept themselves quiet. The mischief was done by persons who were under the power of error, who at that time vaunted as much perhaps of their superior illumination, as we now-a-days do of ours, and into each of whom the European spirit of education had instilled this error of early infancy, *Be the First.*

How many evils does ignorance conceal from us, which we are doomed one day to encounter in the course of human life, beyond the possibility of escaping! the inconstancy of friends, the revolutions of fortune, calumnies, and the hour of death itself so tremendous to most men. The knowledge of ills like these would mar all the comfort of living. How many blessings does ignorance render sublime! the illusions of friendship, and those of love, the perspectives of hope, and the very treasures which Science unfolds. The Sciences inspire delight only when we enter upon the study of them, at the period when

* For this reason it is that we admire only that which is uncommon. Were there to appear over the horizon of Paris one of those parhelia which are so common at Spitsbergen, the whole inhabitants of the city would be in the streets to gaze at it, and wonder. It is nothing more however than a reflection of the Sun's disk in the clouds; and no one stands still to contemplate the Sun himself, because the Sun is an object too well known to be admired.

It is mystery which constitutes one of the charms of Religion. Those who insist upon a geometrical demonstration on this subject, betray a profound ignorance at once of the Laws of Nature, and of the demands of the human heart.

the mind, in a state of ignorance, plunges into the great career. It is the point of contact between light and darkness which presents to the eye the most favourable state of vision : this is the harmonic point which excites our admiration, when we are beginning to see clearly ; but it lasts only a single instant. It vanishes together with ignorance. The elements of Geometry may have impassioned young minds, but never the aged, unless in the case of certain illustrious Mathematicians who were proceeding from discovery to discovery. Those sciences only, and those passions, which are subjected to doubt and chance, form enthusiasts at every age of life, such as chemistry, avarice, play, and love.

For one pleasure which Science bestows, and causes to perish in the bestowing, ignorance presents us with a thousand which flatter us infinitely more. You demonstrate to me that the Sun is a fixed globe, the attraction of which gives to the planets one half of their movements. Had they who believed it to be conducted round the world by *Apollo* an idea less sublime ? They imagined at least that the attention of a God pervaded the Earth, together with the rays of the Orb of Day. It is Science which has dragged down the chaste *Diana* from her nocturnal car : she has banished the *Hamadryads* from the antique forests, and the gentle *Naiads* from the fountains. Ignorance had invited the Gods to partake of it's joys and it's woes ; to Man's wedding, and to his grave : Science discerns nothing in either except the elements merely. She has abandoned Man to Man, and thrown him upon the Earth as into a desert. Ah ! whatever may be the names which she gives to the different kingdoms of Nature, celestial Spirits undoubtedly regulate their combinations so ingenious, so varied, and so uniform ; and Man, who could bestow nothing upon himself, is not the only being in the Universe who partakes of intelligence.

It is not to the illumination of Science that the DEITY communicates the most profound sentiment of his attributes, but to our ignorance. Night conveys to the mind a much grander idea of infinity than all the glare of day. In the day-time I see but one Sun ; during the night I discern thousands. Are those very stars so variously coloured really Suns ? Are those planets which revolve around ours actually inhabited as it is ? From whence

came the planet Cybele,* discovered but yesterday by a German of the name of *Herschel*? It has been running it's race from the beginning of the Creation, and was till of late unknown to us. Whither go those uncertainly revolving comets, traversing the regions of unbounded space? Of what consists that Milky Way which divides the firmament of Heaven? What are those two dark clouds placed toward the Antartic Pole, near the cross of the South? Can there be stars which diffuse darkness, conformably to the belief of the Ancients? Are there places in the firmament which the light never reaches? The Sun discovers to me only a terrestrial infinity, and the night discloses an infinity altogether celestial. O, mysterious ignorance, draw thy hallowed curtains over those enchanting spectacles! Permit not human Science to apply to them it's chearless compasses. Let not virtue be reduced henceforth to look for her reward from the justice and the sensibility of a Globe! Permit her to think that there are, in the Universe, destinies far different from those which fill up the measure of woe upon this Earth.

Science is continually shewing us the boundary of our reason, and ignorance is for ever removing it. I take care in my solitary rambles not to ask information respecting the name and quality of the person who owns the castle which I perceive at a distance. The history of the master frequently disfigures that of the landscape. It is not so with the History of Nature; the more her Works are studied the more is our admiration excited. There is one case only in which the knowledge of the works of men is agreeable to us, it is when the monument which we contemplate has been the abode of goodness. What little spire is that which I perceive at Montmorency? It is that of Saint-Gratian, where *Catinat* lived the life of a sage, and under which his ashes are laid to rest. My soul, circumscribed within the precincts of a small village, takes it's flight, and ranges over the capacious sphere of the age of *Louis XIV.* and hastens thence to expatiate through a sphere more sublime than that of the World, the sphere of Virtue. When I am incapable of procuring for myself such perspectives as these, ignorance of places answers my purpose much better than the knowledge of them

* The English, in compliment to their Sovereign *George III.* give it the name of *Georgium Sidus*.

could do. I have no occasion to be informed that such a forest belongs to an Abbey or to a Dutchy, in order to feel how majestic it is. It's ancient trees, it's profound glades, it's solemn, silent solitudes, are sufficient for me. The moment I cease to behold Man there, that moment I feel a present Deity. Let me give ever so little scope to my sentiment, there is no landscape but what I am able to ennoble. These vast meadows are metamorphosed into oceans; these mist-clad hills are islands emerging above the horizon; that city below is a city of Greece, dignified by the residence of *Socrates* and of *Xenophon*. Thanks to my ignorance I can give the reins to the instinct of my soul. I plunge into infinity. I prolong the distance of places by that of ages; and to complete the illusion, I make that enchanted spot the habitation of virtue,

OF THE SENTIMENT OF MELANCHOLY.

So beneficent is Nature that she converts all her phenomena into so many sources of pleasure to Man; and if we pay attention to her procedure, it will be found that her most common appearances are the most agreeable.

I enjoy pleasure, for example, when the rain descends in torrents, when I see the old mossy walls dripping, and when I hear the whistling of the wind, mingled with the clattering of the rain. These melancholy sounds, in the night-time, throw me into a soft and profound sleep. Neither am I the only person susceptible of such affections. *Pliny* tells us of a Roman Consul, who when it rained had his couch spread under the thick foliage of a tree, in order to hear the drops clatter as they fell, and to be lulled to sleep by the murmuring noise.

I cannot tell to what physical law Philosophers may refer the sensations of melancholy. For my own part I consider them as the most voluptuous affections of the soul. Melancholy, says *Michael Montaigne*, is dainty. It proceeds, if I am not mistaken, from it's gratifying at once the two powers of which we are formed, the body and the soul; the sentiment of our misery, and that of our excellence.

Thus, for example, in bad weather, the sentiment of my human misery is tranquillized by seeing it rain, while I am under cover; by hearing the wind blow violently while I am comfortable in bed. I, in this case, enjoy a negative felicity. With

this are afterwards blended some of those attributes of the Divinity, the perceptions of which communicate such exquisite pleasure to the soul ; such as infinity of extension, from the distant murmuring of the wind. This sentiment may be heightened from reflection on the Laws of Nature, suggesting to me that this rain, which comes for the sake of supposition, from the West, has been raised out of the bosom of the Ocean, and perhaps from the coasts of America ; that it has been sent to sweep our great cities into cleanliness ; to replenish the reservoirs of our fountains ; to render our rivers navigable ; and whilst the clouds which pour it down are advancing eastward, to convey fertility even to the vegetables of Tartary, the grains and the garbage which it carries down our rivers, are hurling away westward, to precipitate themselves into the Sea to feed the fishes of the Atlantic Ocean. These excursions of my understanding convey to the soul an extension corresponding to it's nature, and appear to me so much the more pleasing, that the body, which for it's part loves repose, is more tranquil and more completely protected.

If I am in a sorrowful mood, and not disposed to send my soul on an excursion so extensive, I still feel much pleasure in giving way to the melancholy which the bad weather inspires. It looks as if Nature were then conforming to my situation, like a sympathizing friend. She is besides at all times so interesting, under whatever aspect she exhibits herself, that when it rains I think I see a beautiful woman in tears. She seems to be more beautiful the more that she wears the appearance of affliction. In order to be impressed with these sentiments, which I venture to call voluptuous, I must have no project in hand of a pleasant walk, of visiting, of hunting, of journeying, which in such circumstances would put me into bad humour, from being contradicted. Much less ought our two component powers to cross, or clash against each other, that is, to let the sentiment of infinity bear upon our misery, by thinking that this rain will never have an end ; and that of our misery to dwell on the phenomena of Nature, by complaining that the seasons are quite deranged, that order no longer reigns in the elements, and thus giving into all the peevish, inconclusive reasonings, adopted by a man who is wet to the skin. In order to the enjoyment of bad weather, our soul must be travelling abroad, and the body

at rest. From the harmony of these two powers of our constitution it is, that the most terrible revolutions of Nature frequently interests us more than her gayest scenery. The volcano near Naples attracts more travellers to that city than the delicious gardens which adorn her shores; the plains of Greece and Italy, overspread with ruins, allure more than the richly cultivated lawns of England; the picture of a tempest, more connoisseurs than that of a calm; and the fall of a tower, more spectators than it's construction.

The Pleasure of Ruin.

I was for some time impressed with the belief that Man had a certain unaccountable taste for destruction. If the populace can lay their hands upon a monument they are sure to destroy it. I have seen at Dresden, in the gardens of the Count *de Brühl*, beautiful statues of females, which the Prussian soldiery had amused themselves with mutilating by musket-shot when they got possession of that city. Most of the common people have a turn for slander; they take pleasure in levelling the reputation of all that is exalted. But this malevolent instinct is not the production of Nature. It is infused by the misery of the individuals, whom education inspires with an ambition which is interdicted by Society, and which throws them into a negative ambition. Incapable of raising any thing, they are impelled to lay every thing low. The taste for ruin in this case is not natural, and is simply the exercise of the power of the miserable. Man in a savage state destroys the monuments only of his enemies; he preserves with the most assiduous care those of his own Nation; and what proves him to be naturally much better than Man in a state of Society, he never slanders his compatriots.

Be it as it may, the passive taste for ruin is universal. Our voluptuaries embellish their gardens with artificial ruins; savages take delight in a melancholy repose by the brink of the Sea, especially during a storm, or in the vicinity of a cascade surrounded by rocks. Magnificent destruction presents new picturesque effects; and it was the curiosity of seeing this produced, combined with cruelty, which impelled *Nero* to set Rome on fire, that he might enjoy the spectacle of a vast conflagration. The sentiment of humanity out of the question, those long

streams of flame which, in the middle of the night, lick the Heavens, to make use of *Virgil's* expression, those torrents of red and black smoke, those clouds of sparks of all colours, those scarlet reverberations in the streets, on the summit of towers, along the surface of the waters, and on the distant mountains, give us pleasure even in pictures and in descriptions.

This kind of affection, which is by no means connected with our physical wants, has induced certain Philosophers to allege, that our soul, being in a state of agitation, took pleasure in all extraordinary emotions. This is the reason, say they, that such crowds assemble in the Place de Grève to see the execution of criminals. In spectacles of this sort, there is in fact no picturesque effect whatever. But they have advanced their axiom as slightly as so many others with whom their Works abound. First, our soul takes pleasure in rest as much as in commotion. It is a harmony very gentle, and very easily disturbed by violent emotions; and granting it to be in it's own nature a movement, I do not see that it ought to take pleasure in those which threaten it with destruction. *Lucretius* has, in my opinion, come much nearer to the truth, when he says that tastes of this sort arise from the sentiment of our own security, which is heightened by the sight of danger to which we are not exposed. It is a pleasant thing, says he, to contemplate a storm from the shore. It is undoubtedly from this reference to self, that the common people take delight in relating by the fire-side, collected in a family way during the Winter evenings, frightful stories of ghosts, of men loosing themselves by night in the woods, of highway robberies. From the same sentiment likewise it is, that the better sort take pleasure in the representation of tragedies, and in reading the description of battles, of shipwrecks, and of the crash of empire. The security of the snug tradesman is increased by the danger to which the soldier, the mariner, the courtier is exposed. Pleasure of this kind arises from the sentiment of our misery, which is as has been said one of the instincts of our melancholy.

But there is in us besides a sentiment more sublime, which derives pleasure from ruin independently of all picturesque effect, and of every idea of personal security; it is that of Deity, which ever blends itself with our melancholy affections, and which constitutes their principal charm. I shall attempt to un-

fold some of the characters of it, following the impressions made upon us by ruins of different kinds. The subject is both rich and new ; but I possess neither leisure nor ability to bestow upon it a profound investigation. I shall however drop a few words upon it by the way, in the view of exculpating and of exalting human nature with what ability I have.

The heart of Man is so naturally disposed to benevolence, that the spectacle of a ruin which brings to our recollection only the misery of our fellow men, inspires us with horror, whatever may be the picturesque effect which it presents. I happened to be at Dresden in the year 1765, that is several years after it had been bombarded. That small but very beautiful and commercial city, more than half composed of little palaces charmingly arranged, the fronts of which were adorned externally with paintings, colonades, balconies, and pieces of sculpture, at that time presented a pile of ruins. A considerable part of the enemy's bombs had been directed against the Lutheran church, called St. Peter's, built in form of a rotundo, and arched over with so much solidity that a great number of those bombs struck the cupola, without being able to injure it, but rebounded on the adjoining palaces, which they set on fire and partly consumed. Matters were still in the same state at the conclusion of the war, at the time of my arrival. They had only piled up along some of the streets, the stones which encumbered them ; so that they formed on each side long parapets of blackened stone. You might see halves of palaces standing, laid open from the roof down to the cellars. It was easy to distinguish in them the extremity of stair-cases, painted ceilings, little closets lined with Chinese paper, fragments of mirrors, of marble chimneys, of smoked gildings. Of others nothing remained except massy stacks of chimneys rising amidst the rubbish, like long black and white pyramids. More than a third part of the city was reduced to this deplorable condition. You saw the inhabitants moving backward and forward with a settled gloom on their faces, formerly so gay that they were called the Frenchmen of Germany. Those ruins, which exhibited a multitude of accidents singularly remarkable, from their forms, their colours, and their grouping, threw the mind into a deep melancholy ; for you saw nothing in them but the traces of the wrath of a King, who had not levelled his vengeance against the pon-

derous ramparts of a warlike city, but against the pleasant dwellings of an industrious people. I observed even more than one Prussian deeply affected at the sight. I by no means felt, though a stranger, that reflection of self-security which arises in us on seeing a danger against which we are sheltered ; but on the contrary a voice of affliction thrilled through my heart, saying to me, *If this were thy country !*

It is not so with ruins which are the effect of time. These give pleasure by launching us into infinity ; they carry us several ages back, and interest us in proportion to their antiquity. This is the reason that the ruins of Italy affect us more than those of our own country ; the ruins of Greece more than those of Italy ; and the ruins of Egypt more than those of Greece. The first antique monument which I had ever seen was in the vicinity of *Orange*. It is a triumphal arch which *Marius* caused to be erected to commemorate his victory over the Cimbri. It stands at a small distance from the city in the midst of fields. It is an oblong mass, consisting of three arcades, somewhat resembling the gate of St. Dennis. On getting near I became all eyes to gaze at it. What ! exclaimed I, a work of the ancient Romans ! And imagination instantly hurried me away to Rome, and to the age of *Marius*. It would not be easy for me to describe all the successive emotions which were excited in my breast. In the first place, this monument, though erected over the sufferings of Mankind, as all the triumphal arches in Europe are, gave me no pain ; for I recollected that the Cimbri had come to invade Italy, like bands of robbers. I remarked, that if this triumphal arch was a memorial of the victories of the Romans over the Cambri, it was likewise a monument of the triumph of Time over the Romans. I could distinguish upon it, in the bass-relief of the frize, which represents a battle, an ensign containing these characters clearly legible, *S. P. Q. R. Senatus Populus Que Romanus* ; and another inscribed with *M. O.* the meaning of which I could not make out. As to the warriors, they are so completely effaced that neither their arms nor their features are distinguishable. Even the limbs of some of them are worn out. The mass of this monument is, in other respects, in excellent preservation, excepting one of the square pillars that support the arch, which a vicar in the neighbourhood had demolished to repair his parsonage-house. This modern ruin

suggested another train of reflection, respecting the exquisite skill of the Ancients in the construction of their public monuments ; for, though the pillar which supported one of the arches on one side, had been demolished, as I have mentioned, nevertheless that part of the arch which rested upon it hung unsupported in the air, as if the pieces of the vaulting had been glued to each other. Another idea likewise struck me, namely, that the demolishing parson might perhaps have been a descendant from the ancient Cimbri, as we modern French trace up our descent to the ancient Nations of the North which invaded Italy. Thus, the demolition excepted, of which I by no means approve, from the respect I bear to antiquity, I mused upon the vicissitudes of all human affairs, which put the victors in the place of the vanquished, and the vanquished in that of the victors. I settled the matter thus therefore in my own mind, that as *Marius* had avenged the honour of the Romans and levelled the glory of the Cimbri, one of the descendants of the Cimbri had, in his turn, levelled that of *Marius* ; while the young people of the vicinity, who might come perhaps on their days of festivity to dance under the shade of this triumphal arch, spent not a single thought about either the person who constructed, or the person who demolished it.

The ruins in which Nature combats with human Art inspire a gentle melancholy. In these she discovers to us the vanity of our labours, and the perpetuity of her own. As she is always building up, even when she destroys, she calls forth from the clefts of our monuments the yellow gillyflower, the chenopodium, grasses of various sorts, wild cherry-trees, garlands of bramble, stripes of moss, and all the saxatile plants, which by their flowers and their attitudes form the most agreeable contrasts with the rocks.

I used to stop formerly with a high degree of pleasure in the garden of the Luxembourg, at the extremity of the alley of the Carmelites, to contemplate a piece of architecture which stands there, and which had been originally intended to form a fountain. On one side of the pediment which crowns it is stretched along an ancient River-god, on whose face time has imprinted wrinkles inexpressibly more venerable than those which had been traced by the chisel of the Sculptor : it has made one of the thighs to drop off, and has planted a maple tree in it's place.

Of the Naiad who was opposite, on the other side of the pediment, nought remains except the lower part of the body. The head, the shoulders, the arms, have all disappeared. The hands are still supporting an urn, out of which issues, instead of fluviatic plants, some of those which thrive in the driest situations, tufts of yellow gillyflowers, dandelions, and long sheaves of saxatile grasses.

A fine style of Architecture always produces beautiful ruins. The plans of Art, in this case, form an alliance with the majesty of those of Nature. I know no object which presents a more imposing aspect than the antique and well-constructed towers which our ancestors reared on the summit of mountains, to discover their enemies from afar, and out of the coping of which now shoot out tall trees, with their tops waving majestically in the wind. I have seen others, the parapets and battlements of which, murderous in former times, were embellished with the lilach in flower, whose shades, of a bright and tender violet hue, formed enchanting oppositions with the cavernous and embrowned stone-work of the tower.

The interest of a ruin is greatly heightened when some moral sentiment is blended with it; for example, when those degraded towers are considered as having been formerly the residence of rapine. Such has been, in the Pais de Caux, an ancient fortification called the castle of Lillebonne. The lofty walls which form it's precinct are ruinous at the angles, and so overgrown with ivy that there are very few spots where the layers of the stones are perceptible. From the middle of the courts, into which I believe it must have been no easy matter to penetrate, arise lofty towers with battlements, out of the summit of which spring up great trees, appearing in the air like a head-dress of thick and bushy locks. You perceive here and there through the mantling of the ivy which clothes the sides of the castle, Gothic windows, embrasures, and breaches which give a glimpse of stair-cases, and resemble the entrance into a cavern. No bird is seen flying around this habitation of desolation, except the buzzard hovering over it in silence; and if the voice of any of the feathered race makes itself sometimes heard there, it is that of some solitary owl which has retired thither to build her nest. This castle is situated on a rising ground, in the middle of a narrow valley formed by mountains

crowned with forests. When I recollect, at sight of this mansion, that it was formerly the residence of petty tyrants, who before the royal authority was sufficiently established over the kingdom, from thence exercised their self-created right of pillage over their miserable vassals, and even over inoffensive passengers who fell into their hands, I imagine to myself that I am contemplating the carcase, or the skeleton, of some huge, ferocious beast of prey.

The Pleasure of Tombs.

But there are no monuments more interesting than the tombs of men, and especially those of our own ancestors. It is remarkable that every Nation, in a state of Nature, and even the greatest part of those which are civilized, have made the tombs of their fore-fathers the centre of their devotions, and an essential part of their religion. From these however must be excepted the people whose fathers render themselves odious to their children by a gloomy and severe education, I mean the western and southern Nations of Europe. This religious melancholy is diffused every where else. The tombs of progenitors are all over China among the principal embellishments of the suburbs of their cities, and of the hills in the country. They form the most powerful bonds of patriotic affection among savage Nations. When the Europeans have sometimes proposed to these a change of territory, this was their reply: "Shall we say to the bones of our Fathers, Arise, and accompany us to a foreign land?" They always considered this objection as insurmountable.

Tombs have furnished to the poetical talents of *Young* and *Gesner*, imagery the most enchanting. Our voluptuaries, who sometimes recur to the sentiments of Nature, have factitious monuments erected in their gardens. These are not, it must be confessed, the tombs of their parents. But whence could they have derived this sentiment of funeral melancholy, in the very midst of pleasure? Must it not have been from the persuasion that something still subsists after we are gone? Did a tomb suggest to their imagination, only the idea of what it is designed to contain, that is of a corpse merely, the sight of it would shock rather than please them. How afraid are most of them at the thought of death! To this physical idea then

some moral sentiment must undoubtedly be united. The voluptuous melancholy resulting from it, arises, like every other attractive sensation, from the harmony of the two opposite principles; from the sentiment of our fleeting existence, and that of our immortality; which unite on beholding the last habitation of Mankind. A tomb is a monument erected on the confines of the two Worlds.

It first presents to us the end of the vain disquietudes of life, and the image of everlasting repose: it afterwards awakens in us the confused sentiment of a blessed immortality, the probabilities of which grow stronger and stronger, in proportion as the person whose memory is recalled was a virtuous character. It is there that our veneration fixes. And this is so unquestionably true, that though there be no difference between the dust of *Nero* and that of *Socrates*, no one would grant a place in his grove to the remains of the Roman Emperor, were they deposited even in a silver urn; whereas every one would exhibit those of the Philosopher in the most honourable place of his best apartment, were they contained in only a vase of clay.

It is from this intellectual instinct therefore in favour of virtue, that the tombs of great men inspire us with a veneration so affecting. From the same sentiment too it is, that those which contain objects that have been lovely excite so much pleasing regret; for, as we shall make appear presently, the attractions of love arise entirely out of the appearances of virtue. Hence it is that we are moved at the sight of a little hillock which covers the ashes of an amiable infant, from the recollection of it's innocence: hence again it is, that we are melted into tenderness on contemplating the tomb in which is laid to repose a young female, the delight and the hope of her family by reason of her virtues. In order to render such monuments interesting and respectable there is no need of bronzes, marbles, and gildings. The more simple that they are the more energy they communicate to the sentiment of melancholy. They produce a more powerful effect when poor rather than rich, antique rather than modern, with details of misfortune rather than with titles of honour, with the attributes of virtue rather than with those of power. It is in the country principally that their impression makes itself felt in a very lively manner. A simple, unornamented grave there, causes more tears to flow than the gaudy

splendor of a cathedral interment.* There it is that grief assumes sublimity ; it ascends with the aged yews in the church-yard ; it extends with the surrounding hills and plains ; it allies itself with all the effects of Nature, with the dawning of the morning, with the murmuring of the winds, with the setting of the Sun, and with the darkness of the night.

Labour the most oppressive, and humiliation the most degrading, are incapable of extinguishing the impression of this sentiment in the breasts of even the most miserable of Mankind. " During the space of two years," says *Father du Tertre*, " our negro *Dominick*, after the death of his wife, never failed for " a single day, as soon as he returned from the place of his employment, to take the little boy and girl which he had by her, " and to conduct them to the grave of the deceased, over which " he sobbed and wept before them for more than half an hour " together, while the poor children frequently caught the infection of his sorrow."† What a funeral oration for a wife and a mother ! This man however was nothing but a wretched slave.‡

* Our Artists set statues of marble a-weeping round the tombs of the Great. It is very proper to make statues weep where men shed no tears. I have been many a time present at the funeral obsequies of the rich ; but rarely have I seen any one shedding a tear on such occasions, unless it were, now and then, an aged domestic, who was perhaps left destitute. Some time ago happening to pass through a little-frequented street of the Fauxbourg Saint-Marceau, I perceived a coffin at the door of a house of but mean appearance. Close by the coffin was a woman on her knees in earnest prayer to GOD, and who had all the appearance of being absorbed in grief. This poor woman having caught with her eye, at the farther end of the street, the priests and their attendants coming to carry off the body, got upon her feet and run off, putting her hands upon her eyes, and crying bitterly. The neighbours endeavoured to stop her and to administer some consolation ; but all to no purpose. As she passed close by me, I took the liberty to ask if it were the loss of a mother or of a daughter that she lamented so piteously. " Alas ! Sir," said she, the tears gushing down her cheeks, " I am mourning the loss of a good " lady who procured me the means of earning my poor livelihood ; she kept " me employed from day to day." I informed myself in the neighbourhood respecting the condition of this beneficent lady : she was the wife of a petty joiner. Ye people of wealth, What use then do you make of riches, during your life-time, seeing no tears are shed over your grave !

† History of the Antilles, tom. viii. chap. 1. sect. 4.

‡ I am somewhat surprised that our author has not, in this place, made mention of the fine French print engraved by Ingouf the younger, after a painting by Le Barbier l'aîné, painter to the last King of France. It repre-

There farther results, from the view of ruins, another sentiment independent of all reflection: it is that of heroism. Great Generals have oftener than once employed their sublime effect in order to exalt the courage of the soldiers. *Alexander* persuaded his army, loaded with the spoils of Persia, to burn their baggage; and the moment that the fire was applied, they are on tiptoe to follow him all over the World. *William*, Duke of Normandy, as soon as he had landed his troops in England, set fire to his own ships, and the conquest of the kingdom was effected.

But there are no ruins which excite in us sentiments so sublime as those which the ruins of Nature produce. They represent to us the vast prison of the Earth in which we are immured, subject itself to destruction; and they detach us at once from our passions and prejudices, as from a momentary and frivolous theatrical exhibition. When Lisbon was destroyed by an earthquake, its inhabitants on making their escape from their houses embraced each other; high and low, friends and enemies, Jews and Inquisitors, known and unknown; every one shared his clothing and provisions with those who had saved nothing. I have seen something similar to this take place on board a ship on the point of perishing in a storm. The first effect of calamity, says a celebrated Writer, is to strengthen the soul, and the second is to melt it down. It is because the first emotion in Man, under the pressure of calamity, is to rise up toward the DEITY; and the second, to fall back into physical wants. This last effect is that of reflection; but the moral and sublime sentiment, almost always, takes possession of the heart at sight of a magnificent destruction.

Ruins of Nature.

When the predictions of the approaching dissolution of the World spread over Europe, some ages ago, a very great number

sents two Canadians, a woman and her husband, at the tomb of their child. The print is founded upon a story related by Raynal: I was going to say, no matter whether the story be an authentic one. At all events, such feelings are far from being incompatible with the character and condition of the American savage. I have myself witnessed the tender bewailings of a young Indian woman, at the grave of her child, recently interred: her mourning, there could be no reason to doubt, was sincere. It was in the solitude, as it were, of a wilderness, and she knew not that she was seen of any one.—B. S. D.

of persons divested themselves of their property ; and there is no reason to doubt that the very same thing would happen at this day, should similar opinions be propagated with effect. But such sudden and total ruins are not to be apprehended in the infinitely sage plans of Nature : under them nothing is destroyed but what is by them repaired.

The apparent ruins of the Globe, such as the rocks which roughen it's surface in so many places, have their utility. Rocks have the appearance of ruins in our eyes only because they are neither square nor polished, like the stones of our monuments ; but their anfractuosities are necessary to the vegetables and animals which are destined to find in them nourishment and shelter. It is only for beings vegetative and sensitive that Nature has created the fossil kingdom ; and as soon as man raises useless masses out of it to these objects on the surface of the Earth, she hastens to apply her chisel to them, in order to employ them in the general harmony.

If we attend to the origin and the end of her Works, those of the most renowned Nations will appear perfectly frivolous. It was not necessary that mighty Potentates should rear such enormous masses of stone, in order one day to inspire me with respect from their antiquity. A little flinty pebble in one of our brooks is more ancient than the pyramids of Egypt. A multitude of cities have been destroyed since it was created. If I feel myself disposed to blend some moral sentiment with the monuments of Nature, I can say to myself, on seeing a rock : “ It was on this place perhaps that the good *Fenelon* reposed, “ while meditating the plan of his divine *Telemachus* ; perhaps “ the day will come when there shall be engraved on it, that he “ had produced a revolution in Europe, by instructing Kings “ that their glory consisted in rendering Mankind happy : and “ that the happiness of Mankind depends on the labours of “ agriculture : posterity will gaze with delight on the very stone “ on which my eyes are at this moment fixed.” It is thus that I embrace at once the past and the future, at sight of an insensible rock, and which, in consecrating it to virtue, by a simple inscription, I render infinitely more venerable than by decorating it with the five orders of Architecture.

Of the Pleasure of Solitude.

Once more, it is melancholy which renders solitude so attractive. Solitude flatters our animal instinct by inviting us to a retreat so much more tranquil as the agitations of our life have been more restless; and it extends our divine instinct, by opening to us perspectives in which natural and moral beauties present themselves with all the attraction of sentiment. From the effect of these contrasts, and of this double harmony, it comes to pass, that there is no solitude more soothing than that which is adjoining to a great city; and no popular festivity more agreeable than that which is enjoyed in the bosom of solitude.

OF THE SENTIMENT OF LOVE.

Were love nothing superior to a physical sensation, I would wish for nothing more than to leave two lovers to reason and to act, conformably to the physical laws of the motion of the blood, of the filtration of the chyle, and of the other humours of the body, were it my object to give the grossest libertine a disgust for it. It's principal act itself is accompanied with the sentiment of shame, in the men of all countries. No nation permits public prostitution; and though enlightened Navigators may have advanced that the inhabitants of Otaheité conformed to this infamous practice, observers more attentive have since adduced proof, that as to the island in question it was chargeable only on young women in the lowest rank of Society, but that the other classes there preserved the sense of modesty common to all mankind.

I am incapable of discovering in Nature any direct cause of shame. If it be alleged that Man is ashamed of the venereal act because it renders him similar to the animal, the reason will be found insufficient; for sleep, drinking, and eating, bring him still more frequently to the similitude of the animal, and yet no shame attaches to these. There is in truth a cause of shame in the physical act: but whence proceeds that which occasions the moral sentiment of it? Not only is the act carefully kept out of sight, but even the recollection of it. Woman considers it as a proof of her weakness: she opposes long resistance to the solicitations of Man. How comes it that Nature has planted this

obstacle in her heart, which in many cases actually triumphs over the most powerful of propensities, and the most headstrong of passions?

Independently of the particular causes of shame, which are unknown to me, I think I discern one in the two powers of which Man is constituted. The sense of love being, if I may so express myself, the centre toward which all the physical sensations converge, as those of perfumes, of music, of agreeable colours and forms, of the touch, of delicate temperatures and savours ; there results from these a very powerful opposition to that other intellectual power from which are derived the sentiments of divinity and immortality. Their contrast is so much the more collusive, that the act of the first is in itself animal and blind, and that the moral sentiment which usually accompanies love, is more expansive and more sublime. The lover accordingly, in order to render his mistress propitious, never fails to make this take the lead, and to employ every effort to amalgamate it with the other sensation. Thus shame arises, in my opinion, from the combat of these two powers ; and this is the reason that children naturally have it not, because the sense of love is not yet unfolded in them ; that young persons have a great deal of it, because these two powers are acting in them with all their energy ; and that most old people have none at all, because they are past the sense of love from a decay of Nature in them, or have lost it's moral sentiment from the corruption of society ; or, which is a common case, from the effect of both together, by the concurrence of these two causes.

As Nature has assigned to the province of this passion, which is designed to be the means of re-perpetuating human life, all the animal sensations, she has likewise united in it all the sentiments of the soul ; so that love presents to two lovers not only the sentiments which blend with our wants, and with the instinct of our misery, such as those of protection, of assistance, of confidence, of support, of repose, but all the sublime instincts besides which elevate Man above humanity. In this sense it is that *Plato* defined love to be, an interposition of the Gods in behalf of young people.*

* It was by means of the sublime influence of this passion that the Thebans formed a battalion of heroes, called the sacred band ; they all fell together in the battle of Cheronea. They were found extended on the ground, all in

Whoever would wish to be acquainted with human nature has only to study that of love ; he would perceive springing out of it all the sentiments of which I have spoken, and a multitude of others which I have neither time nor talents to unfold. We shall remark, first, that this natural affection discloses, in every being, it's principal character, by giving it all the advantage of a complete extension. Thus, for example, it is in the season when each plant re-perpetuates itself by it's flowers and it's fruit, that it acquires all it's perfection, and the characters which

the same straight line, transfixed with ghastly wounds before, and with their faces turned toward the enemy. This spectacle drew tears from the eyes of *Philip* himself, their conqueror. *Lycurgus* had likewise employed the power of love in the education of the Spartans, and rendered it one of the great props of his republic. But as the animal counterpoise of this celestial sentiment was no longer found in the beloved object, it sometimes threw the Greeks into certain irregularities, which have justly been imputed to them as matter of reproach. Their legislators considered women as the instruments merely of procreating children ; they did not perceive that by favouring love between men, they enfeebled that which ought to unite the sexes, and that in attempting to strengthen their political bands, they were bursting asunder those of Nature.

The Republic of *Lycurgus* had besides other natural defects ; I mention only one, the slavery of Helots. These two particulars however excepted, I consider him as the most sublime genius that ever existed : and even as to these he stands in some measure excusable, in consideration of the obstacles of every kind which he had to encounter in the establishment of his Laws.

There are in the harmonies of the different ages of human life relations so delightful, of the weakness of children to the vigour of their parents, of the courage and the love between young persons of the two sexes to the virtue and the religion of unimpassioned old people, that I am astonished no attempt has been made to present a picture, at least, of a human society thus in concord with all the wants of life, and with the Laws of Nature. There are it is true some sketches of this sort in the *Telemachus*, among others, in the manners of the inhabitants of Bœtica ; but they are indicated merely. I am persuaded that such a Society, thus cemented in all it's parts, would attain the highest degree of social felicity of which human nature is susceptible in this World, and would be able to bid defiance to all the storms of political agitation. So far from being exposed to the fear of danger on the part of neighbouring States, it might make an easy conquest of them without the use of arms, as ancient China did, simply by the spectacle of it's felicity, and by the influence of it's virtues. I once entertained a design, on the suggestion of *J. J. Rousseau*, of extending this idea, by composing the History of a Nation of Greece, well known to the Poets, because it lived conformably to Nature, and for that very reason almost altogether unknown to our political Writers ; but time permitted me only to trace the outline of it, or at most to finish the first Book

invariably determine it. It is in the season of love that the birds of song redouble their melody, and that those which excel in the beauty of their colouring array themselves in their finest plumage, the various shades of which they delight to display, by swelling their throats, by rounding their tail into the form of a wheel, or by extending their wings along the ground. It is then that the lusty bull presents his forehead, and threatens with the horn ; that the nimble courser frisks along the plain ; that the ferocious animals fill the forests with the dreadful noise of their roaring, and the tigress, exhaling the odour of carnage, makes the solitudes of Africa to resound with her hideous yells, and appears clothed with every horrid, attractive grace, in the eyes of her tremendous lover.

It is likewise in the season of loving, that all the affections natural to the heart of Man, unfold themselves. Then it is that innocence, candour, sincerity, modesty, generosity, heroism, holy faith, piety, express themselves with grace ineffable in the attitude and features of two young lovers. Love assumes in their souls all the characters of religion and virtue. They betake themselves to flight, far from the tumultuous assemblies of the city, and from the corruptive paths of ambition, in quest of some sequestered spot, where upon the rural altar they may be at liberty to mingle and exchange the tender vows of everlasting affection. The fountains, the woods, the dawning *Aurora*, the constellations of the night, receive by turns the sacred deposit of the oath of Love. Lost at times in a religious intoxication, they consider each other as beings of a superior order. The mistress is a goddess, the lover becomes an idolater. The grass under their feet, the air which they breathe, the shades under which they repose, all, all appear consecrated in their eyes from filling the same atmosphere with them. In the widely extended Universe they behold no other felicity but that of living and dying together, or rather they have lost all sight of death. Love transports them in to ages of infinite duration, and death seems to them only the transition to eternal union.

But should cruel destiny separate them from each other, neither the prospects of fortune, nor the friendship of companions the most endeared, can afford consolation under the loss. They had reached Heaven, they languish on the earth, they are hurried in their despair into the retirement of the cloister, to em-

ploy the remaining dregs of life in re-demanding of GOD the felicity of which they enjoyed but one transient glimpse. Nay many an irksome year after their separation, when the cold hand of age has frozen up the current of sense; after having been distracted by a thousand and a thousand anxieties foreign to the heart, which so many times made them forget that they were human, the bosom still palpitates at sight of the tomb which contains the object once so tenderly beloved. They had parted with it in the World, they hope to see it again in Heaven. Unfortunate *Heloisa*! what sublime emotions were kindled in thy soul by the ashes of thy *Abelard*?

Such celestial emotions cannot possibly be the effects of a mere animal act. Love is not a slight convulsion, as the divine *Marcus-Aurelius* calls it. It is to the charms of virtue, and to the sentiment of her divine attributes, that love is indebted for all that enthusiastic energy. Vice itself, in order to please, is under the necessity of borrowing it's looks and it's language. If theatrical female performers captivate so many lovers, the seduction is carried on by means of the illusions of innocence, of benevolence, and of magnanimity, displayed in the characters of the shepherdesses, of the heroines, and of the goddesses, which they are accustomed to represent. Their boasted graces are only the appearances of the virtues which they counterfeit. If sometimes, on the contrary, virtue becomes displeasing, it is because she exhibits herself in the disguise of harshness, caprice, peevishness, or some other repulsive bad quality.

Thus beauty is the offspring of virtue, and ugliness that of vice; and these characters frequently impress themselves from the earliest infancy by means of education. It will be objected to me that there are men handsome yet vicious, and others homely yet virtuous. *Socrates* and *Alcibiades* have been adduced as noted instances in ancient times. But these very examples confirm my position. *Socrates* was unhappy and vicious at the time of life when the physionomy assumes it's principal characters, from infancy up to the age of seventeen years. He was born in a poor condition; his father had determined, notwithstanding his own declared reluctance, to breed him to the art of sculpture. Nothing less than the authority of an oracle could rescue him from this parental tyranny. *Socrates* acknowledged, in conformity to the decision of a Physionomist, that

he was addicted to women and wine, the vices into which men are usually thrown by the pressure of calamity: at length he became reformed, and nothing could be more beautiful than this Philosopher when he discoursed about the DEITY. As to the happy *Alcibiades*, born in the very lap of fortune, the lessons of *Socrates*, and the love of his parents and fellow-citizens, expanded in him at once beauty of person and soul; but having been at last betrayed into irregular courses, through the influence of evil communications, nothing remained but the bare physiognomy of virtue. Whatever seduction may be apparent in their first aspect, the ugliness of vice soon discovers itself on the faces of handsome men degraded into wickedness. You can perceive, even under their smiles, a certain marked trait of falsehood and perfidy. This dissonance is communicated even to the voice. Every thing about them is masked like their face.

I beg leave farther to observe, that all the forms of organized beings express intellectual sentiments, not only to the eyes of Man, who studies Nature, but to those of animals, which are instructed at once by their instinct, in such particulars of knowledge as are in many respects so obscure to us. Thus, for example, every species of animal has certain traits which are expressive of it's character. From the sparkling and restless eyes of the tiger you may discover his ferocity and perfidy. The gluttony of the hog is announced by the vulgarity of his attitude, and by the inclination of his head toward the ground. All animals are perfectly well acquainted with those characters, for the Laws of Nature are universal. For instance, though there be in the eyes of man, unless he is very attentive, an exceedingly slight exterior difference between a fox and a species of dog which resembles him, the hen will never mistake the one for the other. She will take no alarm on the approach of the dog, but will be seized with horror the instant that the fox appears.

It is still farther to be remarked, that every animal expresses in it's features some one ruling passion, such as cruelty, sensuality, cunning, stupidity. But Man alone, unless he has been debased by the vices of Society, bears upon his countenance the impress of a celestial origin. There is no one trait of beauty but what may be referred to some virtue: such an one belongs to innocence, such another to candour, those to generosity, to modesty, to heroism. It is to their influence that Man is indebt-

ed, in every country, for the respect and confidence with which he is honoured by the brute creation, unless they have been forced out of Nature by unrelenting persecution on the part of Man.

Whatever charms may appear in the harmony of the colours and forms of the human figure, there is no visible reason why it's physical effect should exert an influence over animals, unless the impress of some moral power were combined with it. The plumpness of form, or the freshness of colouring, ought rather to excite the appetite of ferocious animals, than their respect or their love. Finally, as we are able to distinguish their impassioned character, they in like manner can distinguish ours, and are capable of forming a very accurate judgment as to our being cruel or pacific. The game-birds, which fly the sanguinary fowler, gather confidently around the harmless shepherd.

It has been affirmed that beauty is arbitrary in every Nation ; but this opinion has been already refuted by an appeal to matter of fact. The mutilations of the Negroes, their incisions into the skin, their flattened noses, their compressed foreheads ; the flat, long, round, and pointed heads of the savages of North-America ; the perforated lips of the Brasilians ; the large ears of the people of Laos, in Asia, and of some Nations of Guiana, are the effects of superstition, or of a faulty education. The ferocious animals themselves are struck at sight of these deformities. All travellers unanimously concur in their testimony that when lions or tygers are famished, which rarely happens, and thereby reduced to the necessity of attacking caravans in the night time, they fall first upon the beasts of burden, and next upon the Indians, or the black people. The European figure, with it's simplicity, has a much more imposing effect upon them, than when disfigured by African or Asiatic characters.

When it has not been degraded by the vices of Society, the expression of the human face is sublime. A Neapolitan of the name of *John-Baptiste Porta*,* took it into his head to trace in

* Porta was a man of genius, and of much imagination, but his writings, from the general extravagance of their tenor, are now hardly read, and not at all respected. His principal work, the one referred to by Saint-Pierre, is entitled *De Humana Physiognomia*, in four books, first printed in 1586. He also published a work, in six books, *De Physiognomia Cælesti*. I do not doubt that those who attach themselves to such researches, may glean from Porta's books some valuable facts, and many useful hints : but I cannot believe, what

it relations to the figures of the beasts. To this effect he has composed a book embellished with engravings, representing the human head under the forced resemblance of the head of a dog, of a horse, of a sheep, of a hog, and of an ox. His system is somewhat favourable to certain modern opinions, and forms a very tolerable alliance with the hideous changes which the passions produce in the human form. But I should be glad to know after what animal *Pigale* has copied that charming *Mercury* which I have seen at Berlin; and after the passions of what brutes the Grecian Sculptors produced the *Jupiter* of the Capitol, the *Venus pudica*, and the *Apollo* of the Vatican? In what animals have they studied those divine expressions?

I am thoroughly persuaded, as I have said already, that there is not a single beautiful touch in a figure but what may be allied to some moral sentiment, relative to virtue and to Deity. The traits of ugliness might be in like manner referred to some vicious affection, such as jealousy, avarice, gluttony, or rage. In order to demonstrate to our Philosophers how far they are wide of the mark, when they attempt to make the passions the only moving principles of human life, I wish they could be presented with the expression of all the passions collected in one single head; for example, the wanton and obscene leer of a courtesan, with the deceitful and haughty air of an ambitious courtier; and accompanied with an infusion of some touches of hatred and envy, which are negative ambitions. A head which should unite them all would be more horrid than that of *Medusa*; it would be a likeness of *Nero*.

Every passion has an animal character as *John-Baptiste Porta* excellently observed. But every virtue too has it's animal character; and never is a physiognomy more interesting than when you distinguish in it a celestial affection conflicting with an animal passion. Nay I do not know whether it be possible to express a virtue otherwise than by a triumph of this kind. Hence it is that modesty appears so lovely on the face of a young female, because it is the conflict of the most powerful of animal passions with a sublime sentiment. The expression of sensibility likewise renders a face extremely interesting, because

a certain writer has asserted, that these books contain at least as many truths as errors.—B. S. B

the soul, in this case, shews itself in a state of suffering, and because the sight of this excites a virtue in ourselves, namely the sentiment of compassion. If the sensibility of the figure in question is active, that is if it springs itself out of the contemplation of the misery of another, it strikes us still more, because then it becomes the divine expression of generosity.

I have a conviction that the most celebrated statues and pictures of Antiquity owe much of their high reputation entirely to the expression of this double character, that is to the harmony arising out of the two opposite sentiments of passion and virtue. This much is certain, that the most justly boasted master-pieces in sculpture and painting among the Ancients, all presented this kind of contrast. Of this abundance of examples might be adduced from their statues, as the *Venus pudica*, and the dying Gladiator, who preserves even when fallen, respect for his own glory, at the moment he is sinking into the arms of death. Such likewise was that of *Cupid* hurling the thunder after the infant *Alcibiades*, which *Pliny* ascribes to *Praxiteles*, or to *Scopas*. An amiable child, launching from his little hand the dread thunderbolt of *Jupiter*, must excite at once the sentiment of innocence, and that of terror. With the character of the God was blended that of a man equally attractive and formidable.

I believe that the paintings of the Ancients expressed still better those harmonies of opposite sentiments. *Pliny*, who has preserved to us the memory of the most noted of them, quotes among others a picture by *Athenion* of Maronea, which represented the cautious and crafty *Ulysses* detecting *Achilles* under the disguise of a young woman, by presenting an assortment of female trinkets, among which he had carelessly, and without appearance of art, introduced a sword. The lively emotion with which *Achilles* lays hold of that sword, must have exhibited a charming contrast with the habit, and the composed deportment of his nymph character. There must have resulted another no less interesting, in the character of *Ulysses*, with his air of reserve, and the expression of his satisfaction under the restraint of prudence, fearful lest in discovering *Achilles* he should at the same time betray himself.

Another piece still more affecting, from the pencil of *Aristides* of Thebes, represented *Biblis* languishing to death of the love

which she bare to her own brother. In it there must have been distinctly represented the sentiment of virtue repelling the idea of a criminal passion, and that of fraternal friendship, which recalled the heart to love under the very appearances of virtue. These cruel consonances ; despair at the thought of being betrayed by her own heart, the desire of dying, in order to conceal her shame, the desire of life to enjoy the sight of the beloved object, health wasting away under the pressure of conflicts so painful, must have expressed, amidst the languors of death and of life, contrasts the most interesting, on the countenance of that ill-fated maid.

In another picture of the same *Aristides* was represented to admiration, a mother wounded in the breast during the siege of a city, giving suck to her infant. She seemed afraid, says *Pliny*, lest it should draw in her blood together with her milk. *Alexander* prized it so highly that he had it conveyed to Pella the place of his birth. What emotions must have been excited, in contemplating a triumph so exalted as that of maternal affection absorbing all sense of personal suffering ! *Poussin*, as we have seen, has borrowed from this virtue the principal expression of his picture of the Deluge.

Rubens has employed it in a most wonderful manner in giving expression to the face of his *Mary de Medicis*, in which you distinguish at once the anguish and the joy of child-bearing. He farther heightens the violence of the physical passion, by the careless attitude into which the Queen is thrown, in an easy-chair, and by her naked foot, which has shaken off the slipper ; and on the other hand, he conveys the sublimity of the moral sentiment awakened in her by the high destiny of her infant, who is presented to her by a God, reposed in a cradle of bunches of grapes and ears of corn, symbols of the felicity of his reign.

It is thus that the great Masters, not satisfied with opposing mechanically groupes of figures and vacuity, shades and lights, children and old men, feet and hands, pursue with unremitting care those contrasts of our internal powers which express themselves on "the human face divine," in touches ineffable, and which must constitute the eternal charm of their productions. The Works of *Le Sueur* abound in these contrasts of sentiment, and he places them in such perfect harmony with those of the elementary nature, that the result from them is the sweetest and

the most profound melancholy. But it has been much easier for his pencil to paint, than for my pen to describe them.

I shall adduce but one example more to my present purpose, taken from *Poussin*, an Artist most admirable for his skill in graphic composition, but whose colours have suffered considerably from the hand of time. The piece to which I refer is his picture of the rape of the Sabine women. While the Roman soldiery are carrying off by force in their arms the terrified young women of the Sabines, there is a Roman officer, who is desirous of getting possession of one extremely beautiful as well as young. She has taken refuge in the arms of her mother. He dares not presume to offer violence to her, but seems to address the mother with all the ardour of love tempered with respect; his countenance thus speaks; "She will be happy with me! Let me be indebted for her to love, and not to fear! I am less eager to rob you of a daughter, than to give you a son." It is thus that, while he conforms himself in dressing his characters to the simplicity of the age which rendered all conditions nearly similar, he has distinguished the officer from the soldier not by his garb but by his manners. He has caught, as he usually does, the moral character of his subject, which produces a very different effect from that of mere *costume*.

I should have been extremely happy had we been favoured from the pencil of the same ingenious Artist, with a representation of these same female Sabines, after they had become wives and mothers, rushing in between the two contending armies of the Sabines and Romans, "Running," as *Plutarch* tells us, "some on this side, others on that, in tears, shrieking, exclaiming; thrusting themselves through the clashing of arms, and heaps of the dead strewed along the ground, like persons frantic or possessed with a spirit, carrying their sucking infants in their arms, with hair dishevelled, appealing now to Romans, now to Sabines, by every tender adjuration that can reach the heart of Man."*

The most powerful effects of love, as has been said, arise out of contradictory feelings melting into each other, just as those of hatred frequently are produced from similar sentiments which happen to clash. Hence it is that no feeling can be more

* *Plutarch's life of Romulus*

agreeable than to find a friend in a man whom we considered as an enemy ; and no mortification so poignant as meeting an enemy in the man whom we depended upon as a friend. These harmonic effects often render a slight and transient kindness more estimable than a continued series of good offices ; and a momentary offence more outrageous than the declared enmity of a whole life-time ; because in the first case, feelings diametrically opposite graciously unite ; and in the second congenial feelings violently clash. Hence too it is that a single blemish, amidst the valuable qualities of a man of worth, frequently appears more offensive than all the vices of a libertine who displays only a solitary virtue, because from the effect of contrast these two qualities become more prominent, and eclipse the others in the two opposite characters. It proceeds likewise from the weakness of the human mind, which attaching itself always to a single point of the object which it contemplates, fixes on the most prominent quality in framing it's decisions. It is impossible to enumerate the errors into which we are every day falling for want of studying these elementary principles of Nature. It would be possible undoubtedly to extend them much farther ; it is sufficient for my purpose, if I have given a demonstration of their existence, and inspired others with an inclination to apply them properly.

These harmonies acquire greater energy from the adjoining contrasts which detach them, from the consonances which repeat them, and from the other elementary Laws which have been indicated : but if with these are blended some one of the moral sentiments of which I have been presenting a faint sketch, in this case the effect resulting from the whole is inexpressibly delightful. Thus, for example, a harmony becomes in some sort celestial, when it contains a mystery, which always supposes something marvellous and divine. I one day felt a most agreeable effect, as I was looking over a collection of old prints which represented the history of *Adonis*. *Venus* had stolen the infant *Adonis* from *Diana*, and was educating him with her son *Cupid*. *Diana* was determined to recover him, as being the son of one of her nymphs. *Venus* then having on a certain day alighted from her chariot drawn by doves, was walking with the two boys in a valley of *Cythera*. *Diana*, at the head of her armed retinue, places herself in ambush in a forest through

which *Venus* was to pass. *Venus* as soon as she perceived her adversary approaching, and incapable either to escape or to prevent the recapture of *Adonis*, was instantly struck with the thought of clapping wings on his shoulders, and presenting *Cupid* and him together to *Diana*, desired her to take either of the children which she believed to be her property. Both being equally beautiful, both of the same age, and both furnished with wings, the chaste Goddess of the woods was deterred from choosing either the one or the other, and refrained from taking *Adonis* for fear of taking *Cupid*.

This fable contains several sentimental beauties. I related it one day to *J. J. Rousseau*, who was highly delighted with it. "Nothing pleases me so much," said he, "as an agreeable "image which conveys a moral sentiment." We were at that time in the plain of Neuilly, near a park in which we saw a group of Love and Friendship, under the forms of a young man and young woman of fifteen or sixteen years of age, embracing each other with mouth to mouth. Having looked at it he said to me, "Here is an obscene image presented after a charming "idea. Nothing could have been more agreeable than a representation of the two figures in their natural state : Friendship, "as a grown young woman caressing an infant *Cupid*." Being on this interesting subject, I repeated to him the conclusion of that touching fable of *Philomela* and *Progné*.

Le désert est-il sait pour des talens si beaux ?
 Venez faire aux cités eclater leurs merveilles :
 Aussi bien, en voyant les bois,
 Sans cesse il vous souvient que Térée autrefois,
 Parmi des demeures pareilles,
 Exerca sa fureur sur vos divins appas.—
 Et c'est le souvenir d'un si cruel outrage,
 Qui fait, reprit sa sœur, que je ne vous suis pas .
 En voyant les hommes, hélas !
 Il m'en souvient bien davantage.

Why waste such sweetness on the desert air !
 Come, charm the city with thy tuneful note.
 Think too, in solitude, that form so fair
 Felt violation : flee the horrid thought.

Ah ! sister dear, sad *Philomel* replies,
 'Tis this that makes me shun the haunts of men .
 Tereus and Courts the anguish'd heart allies,
 And hastes, for shelter, to the woods again.

“What a series of ideas ! cried he, “how tenderly affecting “it is !” His voice was stifled, and the tears rushed to his eyes. I perceived that he was farther moved by the secret correspondencies between the talents and the destiny of that bird, and his own situation.

It is obvious, then, in the two allegorical subjects of *Diana* and *Adonis*, and of Love and Friendship, that there are really within us two distinct powers, the harmonies of which exalt the soul, when the physical image throws us into a moral sentiment, as in the first example ; and abase it, on the contrary, when a moral sentiment recalls us to a physical sensation, as in the example of Love and Friendship.

The suppressed circumstances contribute farther to the moral expressions, because they are conformable to the expansive nature of the soul. They conduct it over a vast field of ideas. It is to these suppressions that the fable of the Nightingale is indebted for the powerful effect which it produces. Add to these a multitude of other oppositions, which I have not leisure to analyze.

The farther that the physical image is removed from us the greater extension is given to the moral sentiment ; and the more circumscribed that the first is, the more energetic the sentiment is rendered. It is this undoubtedly which communicates so much force to our affections, when we regret the death of a friend. Grief in this case conveys the soul from one World to the other, and from an object full of charms to a tomb. Hence it is that the following passage from *Jeremiah* contains a strain of sublime melancholy : *Vox in Rama audita est ; ploratus & ululatus multus : Rachel plorans filios suos, & noluit consolari, quia non sunt.* “A voice was heard in Ramah, lamentation “and bitter weeping ; Rachel weeping for her children, refused to be comforted, because they are not.”* All the consolations which this World can administer are dashed to pieces against this word of maternal anguish, *non sunt.*

The single *jet d'eau* of Saint-Cloud pleases me more than all its cascades. However, though the physical image should not escape and lose itself in infinity, it may convey sorrow thither, when it reflects the same sentiment. I find in *Plutarch* a noble

* *Jeremiah*, chap. xxxi. ver. 15.

effect of this progressive consonance. "*Brutus*," says he, "giving all up for lost, and having resolved to withdraw from Italy, passed by land through Lucania, and came to Elea which is situated on the sea-side. *Portia* being to return from thence to Rome, endeavoured to conceal the grief which oppressed her in the prospect of their approaching separation ; but with all her resolution and magnanimity she betrayed the sorrow which was preying on her heart, on seeing a picture which there accidentally caught her eye. The subject of the piece was taken from the *Iliad*, and represented the parting of *Hector* and *Andromache*, when he was preparing to take the field, and at the instant when he was delivering the infant *Astyanax* into the arms of his mother, while her eyes remain immovably fixed on *Hector*. The resemblance which the picture bore to her own distress made her burst into tears ; and several times a day she resorted to the place where it hung to gaze at it, and to weep before it. This being observed by *Acilius*, one of the friends of *Brutus*, he repeated the passage from *Homer* in which *Andromache* expresses her inward emotion :

Εκτωρ ἄτάρ σύ μοι ἔσσι πάτηρ καὶ πότνια μήτηρ,
 Ἡ δὲ κασίγνητος. σύ δὲ μοι θαλερὸν παρακοίτης.

Yet while my *Hector* still survives, I see
 My father, mother, kindred, all in thee,
 My wedded Lord.....

"*Brutus* replied with a smile, *But I must not answer Portia in the words of Hector to Andromache* :

Ἀλλ' εἰς οἶκον ἴεσα, τὰ σαντῆς ἔργα κόμιζε,
 Ἴσον τ' ἡλακάτην τε, καὶ ἀμφιστόλοισι κέλευε.

.....hasten to thy tasks at home,
 There guide the spindle, and direct the loom.

"*For though the natural weakness of her body prevents her from acting what the strength of men only can perform, yet she has a mind as valiant, and as active for the good of her Country, as we have.*"

This picture was undoubtedly placed under the peristyle of some temple built on the shore of the Sea. *Brutus* was on the point of embarking without pomp, and without a retinue. His

wife, the daughter of *Cato*, had accompanied him, perhaps on foot. The moment of separation approaches ; in order to soothe her anguish she fixes her eyes on that painting consecrated to the Gods. She beholds in it the last long farewell of *Hector* and *Andromache* ; she is overwhelmed ; and to reanimate her fortitude turns her eyes upon her husband. The comparison is completed, her courage forsakes her, tears gush out, conjugal affection triumphs over love of Country. Two virtues in opposition ! Add to these the characters of a wild nature, which blend so well with human grief : profound solitude, the columns and the cupola of that antique temple, corroded by the keen air of the Sea, and marbled over with mosses which give them the appearance of green bronze ; a setting Sun which gilds the summit of it ; the hollow murmurs of the Sea at a distance, breaking along the coast of Lucania ; the towers of Elea perceptible in the bosom of a valley between two steep mountains, and that sorrow of *Portia* which hurries us back to the age of *Andromache*. What a picture, suggested by the contemplation of a picture ! O, ye Artists, could you but produce it, *Portia* would in her turn call forth many a tear.

I could multiply without end proofs of the two powers by which we are governed. Enough has been said on the subject of a passion the instinct of which is so blind, to evince that we are attracted to it, and actuated by it, from Laws widely different from those of digestion. Our affections demonstrate the immortality of the soul, because they expand in all the circumstances in which they feel the attributes of Deity, such as that of infinity, and never dwell with delight on the Earth, except on the attractions of virtue and innocence.

OF SOME OTHER SENTIMENTS OF DEITY, AND AMONG OTHERS, OF
THAT OF VIRTUE.

There are besides these a great number of sentimental Laws, which it has not been in my power at present to unfold : such are those which suggest presentiments, omens, dreams, the reference of events fortunate and unfortunate to the same epochs, and the like. Their effects are attested among Nations polished and savage, by Writers profane and sacred, and by every man who pays attention to the Laws of Nature. These communications of the soul with an order of things invisible, are rejected by the

learned of modern times, because they come not within the province of their systems and of their almanacs ; but how many things exist, which are not reducible to the plans of our reason and which have not been so much as perceived by it !

There are particular laws which demonstrate the immediate action of Providence on the Human Race, and which are opposite to the general Laws of Physics. For example, the principles of reason, of passion, and of sentiment, as well as the organs of speech and of hearing, are the same in men of all countries ; nevertheless the language of Nations differs all the world over. How comes it that the art of speech is so various among beings who all have the same wants, and that it should be constantly changing in the transmission from father to son, to such a degree that we modern French no longer understand the language of the Gauls, and that the day is coming when our posterity will be unable to comprehend ours ? The ox of Bengal bellows like that of the Ukraine, and the nightingale pours out the same melodious strains to this day, in our climates, as those which charmed the ear of the Bard of Mantua by the banks of the Po.

It is impossible to maintain, though it has been alleged by certain Writers of high reputation, that languages are characterized by climates ; for if they were subjected to influence of this kind, they would never vary in any country in which the climate is invariable. The language of the Romans was at first barbarous, afterwards majestic, and is become at last soft and effeminate. They are not rough to the North, and soft to the South, as *J. J. Rousseau* pretends, who in treating this point has given far too great extension to physical Laws. The language of the Russias, in the North of Europe, is very soft, being a dialect of the Greek ; and the jargon of the southern provinces of France is harsh and coarse. The Laplanders, who inhabit the shores of the Frozen Ocean, speak a language which is very grateful to the ear ; and the Hottentots, who inhabit the very temperate climate of the Cape of Good-Hope, cluck like India cocks. The language of the Indians of Peru is loaded with strong aspirations, and consonants of difficult pronunciation.* Any one, without going out of his closet, may distin-

* I do not think that this remark is correct. But the language of the Mexicans is, indeed, extremely harsh, and pregnant in consonants : much more so, than those of many of the tribes in the more northern parts of America. I

guish the different characters of the language of each Nation, by the names presented on the geographical charts of the Country, and may satisfy himself that their harshness, or softness, has no relation whatever to those of Latitude.

Other observers have asserted that the languages of Nations have been determined and fixed by their great Writers. But the great Writers of the age of *Augustus* did not secure the Latin language from corruption, previously to the reign of *Marcus Aurelius*. Those of the age of *Louis XIV.* already begin to be antiquated among ourselves. If posterity fixes the character of a language to the age which was productive of great Writers, it is not because, as they allege, it is then at it's greatest purity ; for you find in them as many of those inversions of phraseology, of those decompositions of words, and of those embarrassed syntaxes, which render the metaphysical study of all Grammar tiresome and barbarous ; but it is because the Writings of those great men sparkle with maxims of virtue, and present us with a thousand perspectives of the DEITY. I have no doubt that the sublime sentiments which inspire them illuminate them still in the order and disposition of their Works, seeing they are the sources of all harmony. From this, if I am not mistaken, results the unalterable charm which renders the perusal of them so delicious, at all times, and to the men of all Nations. Hence it is that *Plutarch* has eclipsed most of the Writers of Greece, though he was of the age neither of *Pericles*, nor of *Alexander* ; and that the translation of his Works into old French by the good *Amyot*, will be more generally read by posterity than most of the original Works produced even in the age of *Louis XIV.* It is the moral goodness of a period which characterizes a language, and which transmits it unaltered to the generation fol-

deserves to be mentioned, as a further support of the observations of Saint-Pierre, that the harsher and more difficult dialects of North-America were found in the southern parts of this Continent. The dialects of the Otomies and the Cherokees, in the south, are destitute of that sweetness which belongs to not a few of the more northern dialects. But I do not mean, by these observations, to deny, " that languages are characterized by climates." For even the Mexicans, the Otomies, &c., according to my theory, were originally from the North ; and it might, with some degree of plausibility, be urged, that these nations had not resided sufficiently long in the South to receive from climate that influence which it does, in many respects at least, produce on the physical, the moral, and political condition of mankind.—B. S. B

lowing. This is the reason that the languages, the customs, and even the form of dresses are in Asia transmitted inviolably from generation to generation, because fathers, all over that Continent, make themselves beloved by their children. But these reasons do not explain the diversity of language which subsists between one Nation and another. It must ever appear to me altogether supernatural, that men who enjoy the same elements, and are subjected to the same wants, should not employ the same words in expressing them. There is but one Sun to illuminate the whole Earth, and he bears a different name in every different land.

I beg leave to suggest a farther effect of a Law to which little attention has been paid ; it is this, that there never arises any one man eminently distinguished, in whatever line, but there appears at the same time, either in his own Country, or in some neighbouring Nation, an antagonist possessing talents, and a reputation, in complete opposition: such were *Democritus* and *Heraclitus*, *Alexander* and *Diogenes*, *Descartes* and *Newton*, *Corneille* and *Racine*, *Bossuet* and *Fenelon*, *Voltaire* and *J. J. Rousseau*. I had collected on the subject of the two extraordinary men last mentioned, who were contemporaries, and who died the same year, a great number of strictures, which demonstrate that through the whole course of life they presented a striking contrast in respect of talents, of manners, and of fortune : but I have relinquished this parallel, in order to devote my attention to a pursuit which I deemed much more useful.

This balancing of illustrious characters will not appear extraordinary, if we consider that it is a consequence from the general Law of contraries which governs the World, and from which all the harmonies of Nature result: it must therefore particularly manifest itself in the Human Race, which is the centre of the whole ; and it actually does discover itself in the wonderful equilibrium, conformably to which the two sexes are born in equal numbers. It does not fix on individuals in particular, for we see families consisting wholly of daughters, and others all sons ; but it embraces the aggregate of a whole city, and of a Nation, the male and female children of which are always produced very nearly equal in number. Whatever inequality of sex there may exist in the variety of births in fami-

lies, the equality is constantly restored in the aggregate of a people.

But there is another equilibrium no less wonderful, which has not I believe become an object of attention. As there are a great many men who perish in war, in sea-voyages, and by painful and dangerous employments, it would thence follow, that, at the long run, the number of women would daily go on in an increasing proportion. On the supposition that there perishes annually one tenth part more of men than of women, the balancing of the sexes must become more and more unequal. Social ruin must increase from the very regularity of the natural order. This however does not take place; the two sexes are always very nearly equally numerous: their occupations are different, but their destiny is the same. The women, who frequently impel men to engage in hazardous enterprizes to support their luxury, or who foment animosities and even kindle wars among them to gratify their vanity, are carried off in the security of pleasure and indulgence, by maladies to which men are not subject; but which frequently result from the moral, physical, and political pains which the men undergo in consequence of them. Thus the equilibrium of birth between the sexes is re-established by the equilibrium of death.

Nature has multiplied those harmonic contrasts in all her Works, relatively to Man; for the fruits which minister to our necessities frequently possess in themselves opposite qualities, which serve as a mutual compensation.

These effects, as has been elsewhere demonstrated, are not the mechanical results of climate, to the qualities of which they are frequently in opposition. All the Works of Nature have the wants of Man for their end; as all the sentiments of Man have Deity for their principle. The final intentions of Nature have given to Man the knowledge of all her Works, as it is the instinct of Deity which has rendered Man superior to the Laws of Nature. It is this instinct, which, differently modified by the passions, engages the inhabitants of Russia to bathe in the ices of the Neva, during the severest cold of Winter, as well as the Nations of Bengal in the waters of the Ganges; which, under the same Latitudes, has rendered women slaves in the Philippine islands, and despots in the island of Formosa, which makes men effeminate in the Moluccas, and intrepid in

Matassar; and which forms, in the inhabitants of one and the same city, tyrants, citizens, and slaves.

The sentiment of Deity is the first mover of the human heart. Examine a man in those unforeseen moments, when the secret plans of attack and defence with which social man continually encloses himself are suppressed, not on the sight of a vast ruin, which totally subverts them, but simply on seeing an extraordinary plant or animal: "Ah, my God!" exclaims he, "how wonderful this is!" and he invites the first person who happens to pass by to partake of his astonishment. His first emotion is a transport of delight which raises him to God; and the second a benevolent disposition to communicate his discovery to men; but the social reason quickly recall him to personal interest. As soon as he sees a certain number of spectators assembled round the object of his curiosity, "It was I," says he, "who observed it first." Then, if he happens to be a scholar, he fails not to apply his system to it. By and by he begins to calculate how much this discovery will bring him in; he throws in some additional circumstances, in order to heighten the appearance of the marvellous, and he employs the whole credit of his junto to put it off, and to persecute every one who presumes to differ from him in opinion. Thus every natural sentiment elevates us to God, till the weight of our passions, and of human institutions, brings us back again to self. *J. J. Rousseau* was accordingly in the right, when he said that Man was good, but that men were wicked.

It was the instinct of Deity which first assembled men together, and which became the basis of the Religion and of the Laws whereby their union was to be cemented. On this it was that virtue found a support, in proposing to herself the imitation of the Divinity, not only by the exercise of the Arts and Sciences, which the ancient Greeks for this effect denominated the petty virtues; but in the result of the divine power and intelligence, which is beneficence. It consisted in efforts made upon ourselves, for the good of Mankind, in the view of pleasing God only. It gave to Man the sentiment of his own excellence, by inspiring him with the contempt of terrestrial and transient enjoyments, and with a desire after things celestial and immortal. It was this sublime attraction which exalted courage to the rank of a virtue, and which made Man advance intrepid-

ly to meet death amidst so many anxieties to preserve life. *Gallant d'Assas*, what had you to hope for on the Earth, when you poured out your blood in the night without a witness, in the plains of *Klosterkam*, for the salvation of the French army? And you, generous *Eustace de St. Pierre*, what recompense did you expect from your Country, when you appeared before her tyrants with the halter about your neck, ready to meet an infamous death in saving your fellow-citizens? Of what avail to your insensible ashes were the statues and the eulogiums which posterity was one day to consecrate to your memory? Could you so much as hope for this reward, in return for sacrifices either unknown, or loaded with opprobriousness? Could you be flattered in ages to come with the empty homage of a world separated from you by eternal barriers? And you, more glorious still in the sight of God, obscure citizens, who sink ingloriously into the grave; you, whose virtues draw down upon your heads shame, calumny, persecution, poverty, contempt, even on the part of those who dispense the honours of a present state, could you have forced your way through paths so dreary and so rude, had not a light from Heaven illuminated your eyes?*

* It is impossible for virtue to subsist independently of Religion. I do not mean the theatrical virtues which attract public admiration, and this, many a time, by means so contemptible that they may be rather considered as so many vices. The very Pagans have turned them into ridicule. See what *Marcus Aurelius* has said on the subject. By virtue I understand the good which we do to men without expectation of reward on their part, and frequently at the expense of fortune, nay even of reputation. Analyze all those whose traits have appeared to you the most striking; there is no one of them but what points out Deity, nearer or more remote. I shall quote one not generally known, and singularly interesting from its very obscurity.

In the last war in Germany a Captain of cavalry was ordered out on a foraging party. He put himself at the head of his troop, and marched to the quarter assigned him. It was a solitary valley in which hardly any thing but woods could be seen. In the midst of it stood a little cottage; on perceiving it he went up, and knocked at the door; out comes an ancient *Hernouten*, with a beard silvered by age. "Father," says the officer, "shew me a field where I can set my troopers a-foraging"....."Presently," replied the *Hernouten*. The good old man walked before, and conducted them out of the valley. After a quarter of an hour's march they found a fine field of barley: "There is the very thing we want," says the Captain....."Have patience for a few minutes," replies his guide, "you shall be satisfied." They went on, and at the distance of about a quarter of a league farther they arrive at another field

This respect for virtue is the source of that which we pay to ancient Nobility, and which has introduced, in process of time, unjust and odious differences among men, whereas originally, it was designed to establish among them respectable distinctions

of barley. The troop immediately dismounted, cut down the grain, trussed it up, and remounted. The officer upon this says to his conductor, "Father, you have given yourself and us unnecessary trouble; the first field was much better than this."....."Very true, Sir," replied the good old man, "but it was not mine."

This stroke goes directly to the heart. I defy an atheist to produce me any thing once to be compared with it. It may be proper to observe, that the Heronutens are a species of Quakers, scattered over some cantons of Germany. Certain Theologians have maintained that heretics were incapable of virtue, and that their good actions were utterly destitute of merit. As I am no Theologian I shall not engage in this metaphysical discussion, though I might oppose to their opinion the sentiments of St. *Jerome*, and even those of St. *Peter*, with respect to Pagans, when he says to *Cornelius* the centurion: "Of a truth, I perceive that God is no respecter of persons; but in every Nation, he that feareth Him, and worketh righteousness, is accepted with him."† But I should be glad to know what those Theologians think of the charity of the good Samaritan, who was a schismatic. Surely they will not venture to start objections against a decision pronounced by JESUS CHRIST himself. As the simplicity and depth of his divine responses form an admirable contrast with the dishonesty and subtilty of modern doctors, I shall transcribe the whole passage from the Gospel, word for word.

"And behold, a certain lawyer stood up, and tempted him, saying, Master, what shall I do to inherit eternal life?"

"He said unto him, What is written in the law? how readest thou?"

"And he answering, said, Thou shalt love the Lord thy God with all thy heart, and with all thy soul, and with all thy strength, and with all thy mind; and thy neighbour as thyself."

"And he said unto him, Thou hast answered right: this do, and thou shalt live."

"But he, willing to justify himself, said unto JESUS, And who is my neighbour?"

"And JESUS answering, said, A certain man went down from Jerusalem to Jericho, and fell among thieves, which stripped him of his raiment, and wounded him, and departed, leaving him half dead."

"And by chance there came down a certain priest that way; and when he saw him, he passed by on the other side."

"And likewise a Levite, when he was at the place, came and looked on him, and passed by on the other side."

"But a certain Samaritan, as he journeyed, came where he was; and when he saw him, he had compassion on him."

"And went to him, and bound up his wounds, pouring in oil and wine, and set him on his own beast, and brought him to an inn, and took care of him."

† Acts of the Apostles, chap. x. ver. 34, 35.

alone. The Asiatics, more equitable, attached nobility only to places rendered illustrious by virtue. An aged tree, a well, a rock, objects of stability, appeared to them as alone adapted to perpetuate the memory of what was worthy of being remembered. There is not all over Asia an acre of land but what is dignified by a monument. The Greeks and Romans who issued out of it, as did all the other Nations of the World, and who did not remove far from it, imitated in part the customs of our first Fathers. But the other Nations which scattered themselves over the rest of Europe, where they were long in an erratic state, and who withdrew from those ancient monuments of virtue, chose rather to look for them in the posterity of their great men, and to see the living images of them in their children. This is the reason, in my opinion, that the Asiatics have no Noblesse, and the Europeans no monuments.

The instinct of Deity constitutes the charm of the performances which we peruse with most delight. The Writers to whom we always return with pleasure, are not the most spright-

“ And on the morrow, when he departed, he took out two pence and gave *them* to the host, and said unto him, Take care of him : and whatsoever thou spendest more, when I come again, I will repay thee.

“ Which now of these three, thinkest thou, was neighbour unto him that fell among the thieves ?

“ And he said, He that shewed mercy on him. Then said JESUS unto him, Go, and do thou likewise.”†

I shall be carefully on my guard against adding any reflections of my own on this subject, except this simple observation, that the action of the Samaritan is far superior to that of the Hernouten ; for though the second makes a great sacrifice, he is in some sort determined to it by force ; a field must of necessity have been subjected to forage. But the Samaritan entirely obeys the impulse of humanity. His action is free, and his charity spontaneous. This stricture, like all those of the Gospel, contains in a few words a multitude of clear and forcible instructions, respecting the duties inculcated in the second table of the Law. It would be impossible to replace them by others, were imagination itself permitted to dictate them. Weigh all the circumstances of the restless and persevering charity of the Samaritan. He dresses the wounds of an unfortunate wretch, and places him on his own horse ; he exposes his own life to danger, by stopping, and walking on foot, in a place frequented by thieves. He afterwards makes provision, in the inn, for the future as well as for the present necessities of the unhappy man, and continues his journey without expecting any recompense whatever from the gratitude of the person whom he had succoured.

† *Luke, chap. x. ver. 25—37.*

ly, that is, those who abound the most in the social reason which endures but for a moment, but those who render the action of Providence continually present to us. Hence it is that *Homer*, *Virgil*, *Xenophon*, *Plutarch*, *Fenelon*, and most of the ancient Writers, are immortal, and please the men of all Nations. For the same reason it is, that books of travels, though for the most part written very artlessly, and though decried by multitudes of various orders in Society, who discern in them an indirect censure of their own conduct, are nevertheless the most interesting part of modern reading ; not only because they disclose to us some new benefits of Nature, in the fruits and the animals of foreign countries, but because of the dangers by land and by water which their authors have escaped, frequently beyond all reasonable expectation. Finally, it is because the greatest part of our very learned productions studiously steer clear of this natural sentiment, that the perusal of them is so very dry and disgusting, and that posterity will prefer *Herodotus* to *David Hume*, and the Mythology of the Greeks to all our treatises on Physics ; because we love still more to hear the fictions of Deity blended with the History of men, than to reason of men in the History of Deity.

This sublime sentiment inspires Man with a taste for the marvellous, who, from his natural weakness, must have ever been crawling on the ground of which he is formed. It balances in him the sentiment of his misery, which attaches him to the pleasures of habit ; and it exalts his soul, by infusing into him continually the desire of novelty. It is the harmony of human life, and the source of every thing delicious and enchanting that we meet with in the progress of it. With this it is that the illusions of love ever veil themselves, always representing the beloved object as something divine. It is this which opens to ambition perspectives without end. A peasant appears desirous of nothing in the World but to become the churchwarden of his village. Be not deceived in the man ! open to him a career without any impediment in his way ; he is groom, he becomes highway-man, captain of the gang, a commander in chief of armies, a king, and never rests till he is worshipped as a God. He shall be a *Tamerlane* or a *Mahomet*.

An old rich tradesman, nailed to his easy-chair by the gout, tells us that he has no higher ambition than to die in peace.

But he sees himself eternally renovating in his posterity. He enjoys a secret delight in beholding them mount, by the dint of his money, along all the ascending steps of dignity and honour. He himself reflects not that the moment approaches when he shall have nothing in common with that posterity, and that while he is congratulating himself on being the source of their future glory, they are already employing the upstart glory which they have acquired, in drawing a veil over the meanness of their original. The Athiest himself, with his negative wisdom, is carried along by the same impulse. To no purpose does he demonstrate to himself the nothingness, and the fluctuation of all things: his reason is at variance with his heart. He flatters himself inwardly with the hope that his book, or his monument, will one day attract the homage of posterity; or perhaps that the book, or the tomb, of his adversary will cease to be honoured. He mistakes the DEITY, merely because he puts himself in his place.

With the sentiment of Deity, every thing is great, noble beautiful, invincible, in the most contracted sphere of human life; without it, all is feeble, displeasing, and bitter, in the very lap of greatness. This it was which conferred empire on Rome and Sparta, by shewing to their poor and virtuous inhabitants the Gods as their protectors and fellow-citizens. It was the destruction of this sentiment which gave them up, when rich and vicious, to slavery; when they no longer saw in the Universe any other Gods except gold and pleasure. To no purpose does a man make a bulwark around himself of the gifts of fortune; the moment this sentiment is excluded from his heart, languor takes possession of it. If it's absence is prolonged, he sinks into sadness, afterwards into profound and settled melancholy, and finally into despair. If this state of anxiety becomes permanent, he lays violent hands on himself. Man is the only sensible being which destroys itself in a state of liberty. Human life, with all it's pomp, and all it's delights, ceases to him to have the appearance of life, when it ceases to appear to him immortal and divine.*

* *Plutarch* remarks, that *Alexander* did not abandon himself to those excesses which sullied the conclusion of his glorious career, till he believed himself to be forsaken of the Gods. Not only does this sentiment become a source of misery, when it separates itself from our pleasures; but when,

Whatever be the disorders of society, this celestial instinct is ever amusing itself with the children of men. It inspires the man of genius, by disclosing itself to him under eternal attributes. It presents to the Geometrician, the ineffable progressions of infinity ; to the Musician, rapturous harmonies ; to the Historian, the immortal shades of virtuous men. It raises a Parnassus for the Poet, and an Olympus for the Hero. It sheds a lustre on the unfortunate days of the labouring poor. Amidst the luxury of Paris, it extracts a sigh from the breast of the humble native of Savoy after the sacred covering of the snows upon his mountains. It expatiates along the vast Ocean, and recalls, from the gentle climates of India, the European mariner, to the stormy shores of the West. It bestows a country on the wretched, and fills with regret those who have lost nothing. It covers our cradles with the charms of innocence, and the tombs of our forefathers with the hopes of immortality. It reposes in the midst of tumultuous cities, on the palaces of mighty Kings, and on the august temples of Religion. It frequently fixes it's residence in the desert, and attracts the attention of the Universe to a rock. Thus it is that you are clothed with

from the effect of our passions, or of our institutions, which pervert the Laws of Nature, it presses upon our miseries themselves. Thus, for example, when after having given mechanical Laws to the operations of the soul, we come to make the sentiment of infinity to bear upon our physical and transient evils ; in this case, by a just re-action, our misery becomes insupportable. I have presented only a faint sketch of the two principles in Man ; but to whatever sensation of pain, or of pleasure, they may be applied, the difference of their nature, and their perpetual re-action, will be felt.

On the subject of *Alexander* forsaken of the Gods, it is matter of surprise to me that the expression of this situation should not have inspired the genius of some Grecian Artist. Here is what I find on this subject in *Addison* : " There is in the same gallery, (at Florence) a fine bust of *Alexander* the Great, with the face turned toward Heaven, and impressed with a certain dignified air of chagrin and dissatisfaction. I have seen two or three ancient busts of *Alexander*, with the same air, and in the same attitude ; and " I am disposed to believe that the Sculptor pursued the idea of the Conqueror " or sighing after new worlds, or some similar circumstance of his History." *Addison's* Voyage to Italy. I imagine that the circumstance of *Alexander's* History, to which those busts ought to be referred, is that which represents him complaining of being abandoned of the Gods. I have no doubt that it would have fixed the exquisite judgment of *Addison*, had he recollected the observation made by *Plutarch*.

majesty, venerable ruins of Greece and Rome ! and you too, mysterious pyramids of Egypt ! This is the object which we are invariably pursuing amidst all our restless occupations ; but the moment it discovers itself to us in some unexpected act of virtue, or in some one of those events which may be denominated strokes of Heaven, or in some of those indescribably sublime emotions, which are called sentimental touches by way of excellence, it's first effect is to kindle in the breast a very ardent movement of joy, and the second is to melt us into tears. The soul, struck with this divine light, exults at once in enjoying a glimpse of the heavenly country, and sinks at the thought of being exiled from it.

.....Oculis errantibus alto

Quæsitivæ cælo lucem, ingemuitque reperta.

Æneid, Book IV

With wandering eyes explor'd the heavenly light,
Then sigh'd, and sunk into the shades of night.

STUDY XIII.

APPLICATION OF THE LAWS OF NATURE TO THE DISORDERS OF SOCIETY.

I HAVE exposed, in this Work, the errors of human opinion, and the mischief which has resulted from them, as affecting morals and social felicity. I have refuted those opinions, and have ventured to call in question even the methods of human Science ; I have investigated certain Laws of Nature, and have made, I am bold to affirm, a happy application of them to the vegetable order : but all this mighty exertion would, in my own opinion, prove to be vain and unprofitable, unless I employed it in attempting to discover some remedies for the disorders of Society.

A Prussian Author, who has lately favoured the World with various productions, carefully avoids saying a word respecting the administration of the government of his own Country, because, being only a passenger as he alleges in the vessel of the State, he does not consider himself as warranted to intermeddle with the pilot's province. This thought, like so many others borrowed from books, is a mere effusion of wit. It resembles that of the man, who, seeing a house on the point of being seized with the flames, scampered off without making any attempt to save it, because, forsooth, the house was not his. For my own part, I think myself so much the more obliged to take an interest in the vessel of the State, that I am a passenger on board, and thereby bound to contribute my efforts toward her prosperous navigation. Nay, I ought to employ my very leisure, as a passenger, to admonish the steersman of any irregularity, or neglect, which I may have perceived in conducting the business of the ship. Such, to my apprehension, are the examples set us by a *Montesquieu*, a *Fenelon*, and so many other names, to be held in everlasting respect, who have in every country consecrated their labours to the good of their compatriots. The only thing that can be with justice objected to me, is my insufficiency. But I have seen much injustice committed ; I myself have been the victim of it. Images of disorder have

suggested to me ideas of order. Besides, my errors may perhaps serve as a foil to the wisdom of those who shall detect them. Were I but to present one single useful idea to my Sovereign, whose bounty has hitherto supported me, though my services remain unrewarded, I shall have received the most precious recompense that my heart can desire : if I am encouraged to flatter myself with the thought that I have wiped away the tears from the eyes of but one unfortunate fellow-creature, such a reflection would wipe away mine own in my dying moments.

The men who can turn the distresses of their Country to their own private emolument, will reproach me with being its enemy, in the hacknied observation, that things have always been so, and that all goes on very well, because all goes on well for them. But the persons who discover, and who unveil, the evils under which their Country labours, they are not the enemies which she has to fear ; the persons who flatter her, they are her real enemies. The Writers assuredly, such as *Horace* and *Juvenal*, who predicted to Rome her downfall, when at the very height of her elevation, were much more sincerely attached to her prosperity, than those who offered incense to her tyrants, and made a gain of her calamities. How long did the Roman Empire survive the salutary warnings of the first? Even the good Princes who afterwards assumed the government of it, were incapable of replacing it on a solid foundation, because they were imposed upon by their contemporary Writers, who never had the courage to attack the moral and political causes of the general corruption. They satisfied themselves with their own personal reformation, without daring to extend it so much as to their families. Thus it was that a *Titus* and a *Marcus Aurelius* reigned. They were only great Philosophers on the throne. As far as I am concerned, I should believe that I had already deserved well of my Country, had I only announced in her ear this awful truth : That she contains in her bosom more than seven millions of poor, and that their number has been proceeding in an increasing proportion from year to year, ever since the age of *Louis XIV.*

God forbid that I should wish or attempt to disturb, much less destroy, the different orders of the State. I would only wish to bring them back to the spirit of their natural Institution.

Would to God that the Clergy would endeavour to merit, by their virtues, the first place, which has been granted to the sacredness of their functions ; that the Nobility would give their protection to the citizens, and render themselves formidable only to the enemies of the people ; that the administrators of finance, directing the treasures of the Public to flow in the channels of agriculture and commerce, would lay open to merit the road which leads to all useful and honourable employment ; that every woman, exempted by the feebleness of her constitution from most of the burthens of Society, would occupy herself in fulfilling the duties of her gentle destination, those of wife and mother, and thus cementing the felicity of one family ; that, invested with grace and beauty, she would consider herself as one flower in that wreath of delight by which Nature has attached Man to life : and while she proved a joy and a crown to her husband in particular, the complete chain of her sex might indissolubly compact all the other bonds of national felicity !

It is not my aim to attract the applause of the million ; they will not read my Book ; besides, they are already sold to the rich and the powerful. They are continually, I grant, maligning their purchasers, and even frequently applaud the persons who treat them with some degree of firmness ; but they give such persons up, the moment they are discovered to be objects of hatred to the rich ; for they tremble at the frown of the great, or crawl among their feet on receiving the slightest token of benevolence. By the million I understand not only the lowest order in Society, but a great number of others who consider themselves as very far above it.

The people is no idol of mine. If the powers which govern them are corrupted they themselves are the cause of it. We exclaim against the reigns of *Nero* and *Caligula* ; but those detestable Princes were the fruit of the age in which they lived, just as bad vegetable fruits are produced by bad trees : they would not have been tyrants, had they not found among the Romans, informers, spies, parasites, poisoners, prostitutes, hangmen, and flatterers, who told them that every thing went on very well. I do not believe virtue to be the allotment of the people, but I consider it as portioned out among all conditions in life, and in very small quantities, among the little, among the middling, and among the great ; and so necessary to the support of

all the orders of Society, that were it entirely destroyed, Country would crumble to pieces like a temple whose pillars had been undermined.

But I am not particularly interested in the people, either from the hope of their applause, or respect to their virtues, but from the labours in which they are employed. From the people it is that the greatest part of my pleasures and of my distresses proceed; by the people I am fed, clothed, lodged, and they are frequently employed in procuring superfluities for me, while necessaries are sometimes wanting to themselves; from them likewise issue epidemic diseases, robberies, seditions; and did they present nothing to me but simply the spectacle of their happiness or misery, I could not remain in a state of indifference. Their joy involuntarily inspires me with joy, and their misery wrings my heart. I do not reckon my obligation to them acquitted when I have paid them a pecuniary consideration for their services. It is a maxim of the hard-hearted rich man, "That artisan and I are quit," says he, "I have paid him." The money which I give to a poor fellow for a service which he has rendered me, creates nothing new for his use; that money would equally circulate, and perhaps more advantageously for him, had I never existed. The people supports therefore without any return on my part, the weight of my existence: it is still much worse when they are loaded with the additional burthen of my irregularities. To them I stand accountable for my vices and my virtues, more than to the magistrate. If I deprive a poor workman of part of his subsistence, I force him, in order to make up the deficiency, to become a beggar or a thief; if I seduce a plebeian young woman, I rob that order of a virtuous matron; if I manifest in their eyes a disregard to Religion, I enfeeble the hope which sustains them under the pressure of their labours. Besides, Religion lays me under an express injunction to love them. When she commands me to love men, it is the people she recommends to me, and not the Great: to them she attaches all the powers of Society, which exist only by them, and for them. Of a far different spirit from that of modern politicks, which present Nations to Kings as their domains, she presents Kings to Nations as their fathers and defenders. The people were not made for Kings, but Kings for the people. I am bound, therefore, I who am nothing, and

who can do nothing, to contribute my warmest wishes at least toward their felicity.

Farther, I feel myself constrained, in justice to the commonalty of our own Country, to declare that I know none in Europe superior to them in point of generosity, though, liberty excepted, they are the most miserable of all with whom I have had an opportunity to be acquainted. Did time permit I could produce instances innumerable of their beneficence. Our wits frequently trace caricatures of our fish-women, and of our peasantry, because their only object is to amuse the rich ; but they might receive sublime lessons of virtue, did they know how to study the virtues of the common people : for my own part, I have oftener than once found ingots of gold on a dunghill.

I have remarked, for example, that many of our inferior shop-keepers sell their wares at a lower price to the poor man than to the rich ; and when I asked the reason, the reply was, " Sir, every body must live." I have likewise observed that a great many of the lower order never haggle, when they are buying from poor people like themselves : " Every one," say they, " must live by his trade." I saw a little child one day buying greens from the herb-woman : she filled a large apron with the articles which he wanted, and took a penny : on my expressing surprize at the quantity she had given him, she said to me, " I " would not, Sir, have given so much to a grown person ; but I " would not for the world take advantage of a child," I knew a man of the name of *Christal*, in the *rue de la Magdelaine*, whose trade was to go about selling Auvergne-waters, and who supported for five months, *gratis*, an upholsterer of whom he had no knowledge, and whom a law-suit had brought to Paris, because, as he told me, that poor upholsterer, the whole length of the road, in a public carriage, had from time to time given an arm to his sick wife. That same man had a son eighteen years old, a paralytic and changeling from the womb, whom he maintained with the tenderest attachment, without once consenting to his admission into the Hospital of incurables, though frequently solicited to that effect by persons who had interest sufficient to procure it ; " God," said he to me, " has given me the poor youth ; it is my duty to take care of him." I have no doubt that he still continues to support him, though he is under the

necessity of feeding him with his own hands, and has the farther charge of a frequently ailing wife.

I once stopped, with admiration, to contemplate a poor mendicant seated on a post in the *rue Bergere*, near the Boulevards. A great many well-dressed people passed by without giving him any thing ; but there were very few servant-girls, or women loaded with baskets, who did not stop to bestow their charity. He wore a well powdered peruque, with his hat under his arm, was dressed in a surtout, his linen white and clean, and every article so trim, that you would have thought these poor people were receiving alms from him, and not giving them. It is impossible assuredly to refer this sentiment of generosity in the common people to any secret suggestion of self-interest, as the enemies of mankind allege in taking upon them to explain the causes of compassion. No one of those poor benefactresses thought of putting herself in the place of the unfortunate mendicant, who, it was said, had been a watchmaker, and had lost his eye-sight ; but they were moved by that sublime instinct which interests us more in the distresses of the Great, than in those of other men ; because we estimate the magnitude of their sufferings by the standard of their elevation, and of the fall from it. A blind watchmaker was a *Belisarius* in the eyes of servant-maids.

I should never have done, were I to indulge myself in detailing anecdotes of this sort. They would be found worthy of the admiration of the rich, were they extracted from the History of the Savages, or from that of the Roman Emperors ; were they two thousand years old, or had they taken place two thousand leagues off. They would amuse their imagination, and tranquillize their avarice. Our own commonalty undoubtedly well deserves to be loved. I am able to demonstrate, that their moral goodness is the firmest support of government, and that, notwithstanding their own necessities, to them our soldiery is indebted for the supplement to their miserable pittance of pay, and that to them the innumerable poor with whom the kingdom swarms, owe a subsistence wrung from penury itself.

SALUS POPULI SUPREMA LEX ESTO, said the Ancients : let the safety of the People be the paramount Law, because their misery is the general misery. This axiom ought to be so much the more sacred in the eyes of Legislators and Reformers, that

no Law can be of long duration, and no plan of reform reduced into effect, unless the happiness of the people is previously secured. Out of their miseries abuses spring, are kept up, and are renewed. It is from want of having reared the fabric on this sure foundation, that so many illustrious Reformers have seen their political edifice crumble into ruins. If *Agis* and *Cleomenes* failed in their attempts to reform Sparta, it was because the wretched Helots observed with indifference a system of happiness which extended not to them. If China has been conquered by the Tartars, it was because the discontented Chinese were groaning under the tyranny of their Mandarins, while the Sovereign knew nothing of the matter. If Poland has, in our own days, been parcelled out by her neighbours, it was because her enslaved peasantry, and her reduced gentry, did not stand up in her defence. If so many efforts towards reform, on the subject of the clergy, of the army, of finance, of our courts of justice, of commerce, of concubinage, have proved abortive with us, it is because the misery of the people is continually reproducing the same abuses.

I have not seen, in the whole course of my travels, a country more flourishing than Holland. The capital is computed to contain at least a hundred and fourscore thousand inhabitants. An immense commerce presents in that city a thousand objects of temptation, yet you never hear of a robbery committed. They do not even employ soldiers for mounting guard. I was there in 1762, and for eleven years previous to that period no person had been punished capitally. The Laws however are very severe in that Country ; but the people who possess the means of easily earning a livelihood, are under no temptation to infringe them. It is farther worthy of remark, that though they have gained millions by printing all our extravagances in morals, in politics, and in religion, neither their opinions nor their moral conduct have been affected by it, because the people are contented with their condition. Crimes spring up only from the extremes of indigence and opulence.

When I was at Moscow, an aged Genevois who had lived in that city from the days of *Peter I.* informed me, that from the time they had opened to the people various channels of subsistence, by the establishment of manufactures and commerce, seditions, assassinations, robberies, and wilful fires, had become

much less frequent than they used to be. Had there not been at Rome multitudes of miserable wretches, no *Catiline* would have started up there. The police, I admit, prevents at Paris very alarming irregularities. Nay it may be with truth affirmed, that fewer crimes are committed in that capital, than in the other cities of the kingdom in proportion to their population ; but the tranquillity of the common people in Paris is to be accounted for, from their finding there readier means of subsistence, than in the other cities of the kingdom, because the rich of all the provinces fix their residence in the metropolis. After all, the expense of our police, in guards, in spies, in houses of correction, and in goals, is a burthen to that very people, and becomes an expense of punishments, when they might be transformed into benefits. Besides, these methods are repercussions merely, whereby the people are thrown into concealed irregularities, which are not the least dangerous.

The first step toward relieving the indigence of the commonalty, is to diminish the excessive opulence of the rich. It is not by them that the people live, as modern politicians pretend. To no purpose do they institute calculations of the riches of a State, the mass of them is undoubtedly limited ; and if it is entirely in the possession of a small number of the citizens, it is no longer in the service of the multitude. As they always see in detail men for whom they care very little, and in overgrown capitals, money which they love very much, they infer it to be more advantageous for the kingdom, that a revenue of a hundred thousand crowns should be in the possession of a single person, rather than portioned out among a hundred families, because, say they, the proprietors of large capitals engage in great enterprizes. But here they fall into a most pernicious error. The financier who possesses them only maintains a few footmen more, and extends the rest of his superfluity to object of luxury and corruption : moreover, every one being at liberty to enjoy in his own way, if he happens to be a miser, this money is altogether lost to Society. But a hundred families of respectable citizens could live comfortably on the same revenue. They will rear a numerous progeny, and will furnish the means of living to a multitude of other families of the commonalty, by arts that are really useful, and favourable to good morals.

It would be necessary, therefore, in order to check unbounded opulence, without however doing injustice to the rich, to put an end to the venality of employments, which confers them all on that portion of Society which needs them the least as the means of subsistence, for it gives them to those who have got money. It would be necessary to abolish pluralities, by which two, three, four, or more offices, are accumulated on the head of one person ; as well as reversions, which perpetuate them in the same families. This abolition would undoubtedly destroy that monied aristocracy, which is extending farther and farther in the bosom of the monarchy, and which, by interposing an insurmountable barrier between the Prince and his subjects, becomes in process of time the most dangerous of all governments. The dignity of employments would thereby be greatly enhanced, as they must in this case rise in estimation, being considered as the reward of merit, and not the purchase of money ; that respect for gold, which has corrupted every moral principle, would be diminished, and that which is due to virtue would be heightened : the career of public honour would be laid open to all the orders of the State, which, for more than a century past, has been the patrimony of from four to five thousand families, which have transmitted all the great offices from hand to hand, without communicating any share of them to the rest of the citizens, except in proportion as they cease to be such, that is, in proportion as they sell to them their liberty, their honour, and their conscience.

Our Princes have been taught to believe, that it was safer for them to trust to the purses, than to the probity of their subjects. Here we have the origin of venality in the civil state ; but this sophism falls to the ground the moment we reflect that it subsists not in either the ecclesiastical or military order ; and that these great bodies still are, as to the individuals which compose them, the best ordered of any in the State, at least with relation to their police, and to their particular interests.

The Court employs frequent change of fashions, in order to enable the poor to live on the superfluity of the rich. This palliative is so far good, though subject to dangerous abuse : it ought at least to be converted, to its full extent, to the profit of the poor, by a prohibition of the introduction of every article

of foreign luxury into France ; for it would be very inhuman in the rich, who engross all the money in the Nation, to send out of it immense sums annually, to the Indies and to China, for the purchase of muslins, silks, and porcelains, which are all to be had within the kingdom. The trade to India and China is necessary only to Nations which have neither mulberry-trees nor silk worms, as the English and Dutch. They too may indulge themselves in the use of tea, because their country produces no wine. But every piece of callico we import from Bengal, prevents an inhabitant of our own islands from cultivating the plant which would have furnished the raw material, and a family in France from spinning and weaving it into cloth. There is another political and moral obligation which ought to be enforced, that of giving back to the female sex the occupations which properly belong to them, such as midwifery, millinery, the employments of the needle, linen-drapery, trimming, and the like, which require only taste and address, and are adapted to a sedentary way of life, in order to rescue great numbers of them from idleness, and from prostitution, in which so many seek the means of supporting a miserable existence.

Again, a vast channel of subsistence to the people might be opened by suppressing the exclusive privileges of commercial and manufacturing companies. These companies, we are told, provide a livelihood for a whole country. Their establishments, I admit, on the first glance, present an imposing appearance, especially in rural situations. They display great avenues of trees, vast edifices, courts within courts, palaces ; but while the undertakers are riding in their coaches, the rest of the village are walking in wooden shoes. I never beheld a peasantry more wretched than in villages where privileged manufacturers are established. Such exclusive privileges contribute more than is generally imagined to check the industry of a country. I shall quote, on this occasion, the remark of an anonymous English Author, highly respectable for the soundness of his judgment, and for the strictness of his impartiality. "I passed," says he, "through Montreuil, Abbeville, Pequigni.....The second of these cities has likewise its castle : its indigent inhabitants greatly cry up their broad-cloth manufacture : but

“ it is less considerable than those of many villages of the county of York.”*

I could likewise oppose to the woollen manufactures of the villages of the county of York, those of handkerchiefs, cotton-stuffs, woollens, of the villages of the Pais de Caux, which are there in a very flourishing state, and where the peasantry are very rich, because there are no exclusive privileges in that part of the country. The privileged undertaker having no competitor in a country, settles the workman's wages at his own pleasure. They have a thousand devices besides to reduce the price of labour as low as it can go. They give them, for example, a trifle of money in advance, and having thereby inveigled them into a state of insolvency, which may be done by a loan of a few crowns, they have them thenceforward at their mercy. I know a considerable branch of the salt-water fishery almost totally destroyed, in one of our sea-ports, by means of this underhand species of monopoly. The tradesmen of that town, at first, bought the fish of the fishermen, to cure it for sale. They afterwards were at the expense of building vessels proper for the trade : they proceeded next to advance money to the fishermens' wives, during the absence of their husbands. These were reduced, on their return to the necessity of becoming hired servants to the merchant, in order to discharge the debt. The merchant having thus become master of the boats, of the fishermen, and of the commodity, regulated the conditions of the trade just as he pleased. Most of the fishermen, disheartened by the smallness of their profits, quitted the employment ; and the fishery, which was formerly a mine of wealth to the place, is now dwindled to almost nothing.

On the other hand, if I object to a monopoly which would engross the means of subsistence bestowed by Nature on every order of Society, and on both sexes, much less would I consent to a monopoly that should grasp at those which she has assigned to every man in particular. For example, the Author of a book, of a machine, or of any invention, whether useful or agreeable, to which a man has devoted his time, his attention, in a word his genius, ought to be at least as well secured in a perpetual

* Voyage to France, Italy, and the Islands of the Archipelago, in 1750
Four small volumes in 12mo.

right over those who sell his book, or avail themselves of his invention, as a feudal Lord is to exact the rights of fines of alienation, from persons who build on his grounds, and even from those who re-sell the property of such houses. This claim would appear to me still better founded on the natural right, than that of fines of alienation. If the Public suddenly lays hold of a useful invention, the State becomes bound to indemnify the Author of it, to prevent the glory of his discovery from proving a pecuniary detriment to him. Did a law so equitable exist, we should not see a score of booksellers wallowing in affluence at the expense of an Author who did not know, sometimes, where to find a dinner. We should not have seen, for instance, in our own days, the posterity of *Corneille* and of *La Fontaine* reduced to subsist on alms, while the booksellers of Paris have been building palaces out of the sale of their Works.

Immense landed property is still more injurious than that of money and of employments, because it deprives the other citizens, at once, of the social and of the natural patriotism. Besides, it comes in process of time into the possession of those who have the employments and the money ; it reduces all the subjects of the State to dependence upon them, and leaves them no resource for subsistence but the cruel alternative of degrading themselves by a base flattery of the passions of those who have got all the power and wealth in their hands, or of going into exile. These three causes combined, the last especially, precipitated the ruin of the Roman Empire, from the reign of *Trajan*, as *Pliny* has very justly remarked. They have already banished from France more subjects than the revocation of the edict of Nantes. When I was in Prussia, in the year 1765, of the hundred and fifty thousand regular troops which the King then maintained, a full third was computed to consist of French deserters. I by no means consider that number as exaggerated, for I myself remarked, that all the soldiers on guard, wherever I passed, were composed, to a third at least, of Frenchmen ; and such guards are to be found at the gates of all the cities, and in all the villages on the great road, especially toward the frontier.

When I was in the Russian service, they reckoned near three thousand teachers of language of our nation in the city of Moscow, among whom I knew a great many persons of respectable

families, advocates, young ecclesiastics, gentlemen, and even officers. Germany is filled with our wretched compatriots. In the Courts of the South and of the North, what is to be seen but French dancers and comedians? This we have in common at this day with the Italians, and this we had in common with the Greeks of the lower empire. In order to find the means of subsistence, we hunt after a country different from that to which we owe our birth. We do not find the other nations of Europe in this erratic state, except the Swiss, who trade in the human species, but who all return home after having made their fortune. Our compatriots never return; because the precarious employments which they pursue do not admit of their amassing the means of a reputable subsistence, one day, in their native country.

Men of letters who were never out of their country, or who reflect superficially, are constantly exclaiming against the revocation of the Edict of Nantes. But if they imagine that the restoration of that Edict would bring back to France the posterity of the French Refugees, they are greatly mistaken. Those surely who are rich, and comfortably settled in foreign countries, will never think of resigning their establishments, and of returning to the country of their fathers: none but *poor* Protestants therefore would come back. But what should they do there, when so many national Catholics are under the necessity of emigrating for want of subsistence? I have been oftener than once astonished at hearing our pretended politicians loudly redemanding so many citizens to religion, while, by their silence, they abandon such numbers of them to the insatiable avidity of our great proprietors. The truth ought to be told: they have written rather out of hatred to priests, than from love to men. The spirit of tolerance which they wish to establish, is a vain pretext, with which they conceal their real aim; for the Protestants whom they are disposed to recal, are just as intolerant as they accuse the Catholics of being; of which we had an instance a few years ago, in the very Land of Liberty, in England, where a Roman-Catholic Chapel was burnt down to the ground. Intolerance is a vice of European education, and which manifests itself in literature, in systems, and in puppet-shows. There is a farther reason to be assigned for these clamours: it is the same reason which sets them a-talking for the aggrandize

ment of commerce, and silences them on the subject of agriculture, which is from it's very nature the most noble of all occupations. It is, since we must speak out, because rich merchants and great proprietors give splendid suppers, which are attended by fine women, who build up and destroy reputations at their pleasure, whereas the tillers of the ground, and persons starved into exile, give none. The table is now-a-days the main-spring of the aristocracy of the opulent. By means of this engine it is that an opinion, which may sometimes involve the ruin of a State, acquires preponderancy. There too it is, that the honour of a soldier, of a bishop, of a magistrate, of a man of letters, is frequently blasted by a woman who has forfeited her own.

Modern politics have advanced another very gross error, in alleging that riches always find their level in a state. When the indigent are once multiplied in it to a certain point, a wretched emulation is produced among those poor people who shall give himself away the cheapest. Whilst, on the one hand, the rich man, teased by his famished compatriots for employment, overrates the value of his money, the poor, in order to obtain a preference, let down the price of their labour, till at length it becomes inadequate to their subsistence. And then we behold, in the best countries, agriculture, manufactures, and commerce, all expire. Consult, for this purpose, the accounts given us of different districts of Italy, and among others what Mr. *Brydone* has advanced, in his very sensible Tour,* notwithstanding the severe strictures of a canon of Palermo, respecting the luxury and extreme opulence of the Sicilian nobility and clergy, and the abject misery of the peasantry; and you will perceive whether money has found its level in that island or not.

I have been in Malta, which is in no respect comparable, as to fertility of soil, with Sicily; for it consists entirely of one white

* I quote a great many books of travels, because, of all literary productions, I love and esteem them the most. I myself have travelled a great deal, and I can affirm with truth, that I have almost always found them agreed, respecting the productions and the manners of every country, unless when warped by national or party spirit. We must however except a small number, whose romantic tone strikes at first sight. They are run down by every body, yet every body consults them. They afford a constant supply of information to Geographers, Naturalists, Navigators, Traders, Political Writers, Philosophers, Compilers on all subjects, Historians of Foreign Nations, and even those of our own Country, when they are desirous of knowing the truth.

rock ; but that rock is extremely rich in foreign wealth, from the perpetual revenue of the commanderies of the Order of St. John, the capitals of which are deposited in all the Catholic States of Europe, and from the reversions, or spoils, of the Knights who die in foreign countries, and which find their way thither every year. It might be rendered still more opulent by the commodiousness of its harbour, which is situated the most advantageously of any in the Mediterranean: the peasant is there nevertheless in a most miserable condition. His whole clothing consists of drawers, which descend no lower than his knees, and of a shirt without sleeves. He sometimes takes his stand in the great square, his breast, legs, and arms quite naked, and scorched with the heat of the Sun, waiting for a fare, at the rate of one shilling a day, with a carriage capable of holding four persons drawn by a horse, from day-break till midnight ; and thus equipped, to attend travellers to any part of the island they think proper, without any obligation on their part to give either him or his beast so much as a draught of water. He conducts his calash, running always bare-footed over the rocks before his horse, which he leads by the bridle, and before the lazy Knight, who hardly ever deigns to speak to him, unless it be to regale him with the appellation of scoundrel ; whereas the guide never presumes to make a reply but with cap in hand, and with the address of, Your most Illustrious Lordship. The treasury of the Republic is filled with gold and silver, and the common people are never paid but in a copper coin called a piece of four tarins, equivalent, in ideal value, to eightpence of our money, and intrinsically worth little more than two farthings. It is stamped with this device, *non as, sed fides* ; “ not value, but “ confidence.” What a difference do exclusive possessions, and gold, introduce between man and man ! A grave porter in Holland demands of you in *gout geuldt*, that is, good money, for carrying your portmanteau the length of a street, as much as the humble Maltese Bastaze receives for carrying you and three of your friends, a whole day together around the island. The Dutchman is well clothed, and has his pockets lined with good pieces of gold and silver. His coin presents a very different inscription from that of Malta : you read these words on it: *Concordia res parvæ crescunt* ; “ through concord small things increase.” There is in truth as great a difference between the

power and the felicity of one State and another, as between the inscriptions and the substances of their coin.

In Nature it is that we are to look for the subsistence of a people, and in their liberty the channel in which it is to flow. The spirit of monopoly has destroyed many of the branches of it among us, which are pouring in tides of wealth upon our neighbours ; such are, among others, the whale, cod, and herring fisheries. I admit at the same time on the present occasion, that there are enterprizes which require the concurrence of a great number of hands, as well for their preservation and protection, as in order to accelerate their operations, such as the salt-water fisheries : but it is the business of the State to see to the administration of them. No one of our companies has ever been actuated by the patriotic spirit ; they have been associated, if I may be allowed the expression, only for the purpose of forming small particular States. It is not so with the Dutch. For example, as they carry on the herring-fishery to the northward of Scotland, for this fish is always better the farther North you go in quest of it, they have ships of war to protect the fishery. They have others of a very large burthen, called busses, employed night and day in catching them with the net : and others contrived to sail remarkably fast, which take them on board, and carry them quite fresh to Holland. Besides all this, they have premiums proposed to the vessel which first brings her cargo of fish to market at Amsterdam. The fish of the first barrel is paid at the Stadthouse, at the rate of a golden ducat, or about nine shillings and sixpence a-piece, and those of the rest of the cargo at the rate of a florin, or one shilling and tenpence each.

This is a powerful inducement to the proprietors of the fishing vessels, to stretch out to the North as far as possible, in order to meet the fish, which are there of a size and of a delicacy of flavour far superior to those which are caught in the vicinity of our coasts. The Dutch erected a statue to the man who first discovered the method of smoking them, and of making what they call red-herring. They thought, and they thought justly, that the citizen who procures for his country a new source of subsistence, and a new branch of commerce, deserves to rank with those who enlighten, or who defend it. From such attentions as these we see with what vigilance they watch over

every thing capable of contributing to public abundance. It is inconceivable to what good account they turn an infinite number of productions, which we suffer to run to waste, and this from a soil sandy, marshy, and naturally poor and ungrateful.

I never knew a country in which there was such plenty of every thing. They have no vines in the country, and there are more wines in their cellars than in those of Bourdeaux : they have no forests, and there is more ship-building timber in their dock-yards than at the sources of the Meuse and of the Rhine, from which their oaks are transmitted. Holland contains little or no arable ground, and her granaries contain more Polish corn than that great kingdom reserves for the support of its own inhabitants. The same thing holds true as to articles of luxury ; for though they observe extreme simplicity in dress, furniture, and domestic economy, there is more marble on sale in their magazines than lies cut in the quarries of Italy and of the Archipelago ; more diamonds and pearls in their caskets than in those of the jewellers of Portugal ; and more rose-wood, Acajou, Sandal, and India canes than there are in all Europe besides, though their own country produces nothing but willows and linden-trees.

The felicity of the inhabitants presents a spectacle still more interesting. I never saw all over the country so much as one beggar, nor a house in which there was a single brick or a single pane of glass deficient. But the 'Change of Amsterdam is the great object of admiration. It is a very large pile of building, of an architecture abundantly simple, the quadrangular court of which is surrounded by a colonade. Each of its pillars, and they are very numerous, has its chapter inscribed with the name of some one of the principal cities of the World, as Constantinople, Leghorn, Canton, Petersburg, Batavia, and so on ; and is, in propriety of speech, the centre of its commerce in Europe. Of these are very few but what every day witnesses transactions to the amount of millions. Most of the good people who there assemble are dressed in brown, and without ruffles. This contrast appeared to me so much the more striking, that only five days before I happened to be upon the Palais Royal at Paris, at the same hour of the day, which was then crowded with people dressed in brilliant colours, with gold and silver laces, and prating about nothings, the opera, literature,

kept mistresses, and such contemptible trifles, and who had not, the greatest part of them at least, a single crown in their pocket which they could call their own.

We had with us a young tradesman of Nantes, whose affairs had been unfortunately deranged, and who had come to seek an asylum in Holland, where he did not know a single person. He disclosed his situation to my travelling companion, a gentleman of the name of *Le Breton*. This Mr. *Le Breton* was a Swiss officer in the Dutch service, half soldier, half merchant, one of the best men living, who first gave him encouragement, and recommended him immediately on his arrival to his own elder brother, a respectable trader, who boarded in the same house where he had fixed. Mr. *Le Breton* the elder carried this unfortunate refugee to the Exchange, and recommended him without ceremony, and without humiliation, to a commercial agent, who simply asked of the young Frenchman a specimen of his hand-writing; he then took down his name and address in his pocket-book, and desired him to return next day to the same place at the same hour. I did not fail to observe the assignation in company with him and Mr. *Le Breton*. The agent appeared, and presented my compatriot with a list of seven or eight situations of clerk, in different counting-houses, some of which were worth better than thirty guineas a-year, beside board and lodging; and others, about sixty pounds without board. He was accordingly settled at once, without farther solicitation. I asked the elder Mr. *Le Breton* whence came the active vigilance of this agent in favour of a stranger, and one entirely unknown to him: He replied; "It is his trade; he receives, as an acknowledgment, one month's salary of the person for whom he provides. Do not be surprised at this," added he, "every thing here is turned to a commercial account, from an odd old shoe up to a squadron of ships."

We must not suffer ourselves to be dazzled, however, by the illusions of a prodigious commerce; and here it is that our politics have frequently misled us. Trade and manufactures, we are told, introduce millions into a State; but the fine wools, the dye-stuffs, the gold and silver, and the other preparatives imported from foreign countries, are tributes which must be paid back: the people would not have manufactured the less of the wools of the country on their own account; and if it's cloths

had been of the lowest quality, they would have been at least converted to their use. The unlimited commerce of a country is adapted to a people possessing an ungracious and contracted territory, such as the Dutch; they export, not their own superfluity, but that of other nations; and they run no risk of wanting necessities, an evil which frequently befalls many territorial powers. What does it avail a people to clothe all Europe with their woollens, if they themselves go naked; to collect the best wines in the World, if they drink nothing but water; and to export the finest of flour, if they eat only bread made of bran? Examples of such abuses might easily be adduced from Poland, from Spain, and from other countries, which pass for the most regularly governed.

It is in agriculture chiefly that France ought to look for the principal means of subsistence for her inhabitants. Besides agriculture is the great support of morals and religion. It renders marriages easy, necessary, and happy. It contributes toward raising a numerous progeny, which it employs, almost as soon as they are able to crawl, in collecting the fruits of the earth, or in tending the flocks and herds; but it bestows these advantages only on small landed properties. We have already said, and it cannot be repeated too frequently, that small possessions double and quadruple in a country both crops, and the hands which gather them. Great estates, on the contrary, in the hand of one man, transform a country into vast solitudes. They inspire the wealthy farmers with a relish for city pride and luxury, and with a dislike of country employments. Hence they place their daughters in convents, that they may be bred as ladies, and send their sons to academies, to prepare them for becoming advocates or abbés. They rob the children of the trades-people of their resources; for if the inhabitants of the country are always pressing toward an establishment in town, those of the great towns never look toward the plains, because they are blighted by tallages and imposts.

Great landed properties expose the State to another dangerous inconvenience, to which I do not believe that much attention has hitherto been paid. The lands thus cultivated lie in fallow one year at least in three, and in many cases, once every other year. It must happen accordingly, as in every thing left to chance, that sometimes great quantities of such land lie tal-

low at once, and at other times very little. In those years undoubtedly when the greatest part of those lands is lying fallow, much less corn must be reaped over the kingdom at large than in other years. This source of distress, which has never as far as I know as yet engaged the attention of Government, is one of the causes of that dearth, or unforeseen scarcity of grain, which from time to time falls heavy not on France only, but on the different Nations of Europe.

Nature has parcelled out the administration of agriculture between Man and herself. To herself she has reserved the management of the winds, the rain, the Sun, the expansion of the plants; and she is wonderfully exact in adapting the elements conformably to the seasons: but she has left to Man, the adaptation of vegetables, of soils, the proportions which their culture ought to have to the societies to be maintained by them, and all the other cares and occupations which their preservation, their distribution, and their police demand. I consider this remark as of sufficient importance to evince the necessity of appointing a particular Minister of agriculture.* If it should be found impossible for him to prevent chance combinations in the lands which might be in fallow all at once, he would have it at least in his power to prohibit the transportation of the grain of the country, in those years when the greatest part of the land was in full crop, for it is clear almost to a demonstration, that the following year, the general produce will be so much less, as a considerable proportion of the lands will then of course be in fallow.

Small farms are not subjected to such vicissitudes; they are every year productive, and almost at all seasons. Compare, as

* There are many other reasons which militate in favour of the appointment of a Minister of Agriculture. The watering canals absorbed by the luxury of the great Lords, or by the commerce of the great Towns; the puddles and laystalls which poison the villages, and feed perpetual focuses of epidemic disease; the safety of the great roads, and the regulation of the inns upon them; the militia-draughts and imposts of the peasantry; the injustice to which they are in many cases subjected, without daring so much as to complain, these would present to him a multitude of useful establishments which might be made, or of abuses which might be corrected. I am aware that most of these functions are apportioned into divers departments; but it is impossible they should harmonize, and effectually co-operate, till the responsibility attaches to a single individual.

I have already suggested, the quantity of fruits, of roots, of pot-herbs, of grass, and of grain annually reaped, and without intermission, on a track of ground in the vicinity of Paris called the *Pré Saint-Gervais*, the extent of which is but moderate, situated besides on a declivity, and exposed to the North, with the productions of an equal portion of ground taken in the plains of the neighbourhood, and managed on the great scale of agriculture ; and you will be sensible of a prodigious difference. There is likewise a difference equally striking in the number, and in the moral character of the labouring poor who cultivate them. I have heard a respectable Ecclesiastic declare, that the former class went regularly to confession once a month, and that frequently their confession contained nothing which called for absolution.

I say nothing of the endless variety of delight which results from their labours ; from their beds of pinks, of violets, of larks-heel ; their fields of corn, of pease, of pulse ; their edgings of lilach, of vines, by which the small possessions are subdivided : their stripes of meadow ground displaying alternately opening glades, clumps of willows and poplars discovering through their moving umbrage, at the distance of several leagues, either the mountains melting away into the horizon, or unknown castles, or the village-spires in the plain, whose rural chimes from time to time catch the ear. Here and there you fall in with a fountain of limpid water, the source of which is covered with an arch enclosed on every side with large slabs of stone, which give it the appearance of an antique monument. I have sometimes read the following innocent inscriptions traced on the stones with a bit of charcoal :

COLIN and COLETTE, this 8th of March,

ANTOINETTE and SEBASTIAN, this 6th of May.

And I have been infinitely more delighted with such inscriptions than with those of the Academy of Sciences. When the families which cultivate this enchanted spot are scattered about, parents and children, through it's glens, and along it's ridges, while the ear is struck with the distant voice of a country lass singing unperceived, or while the eye is caught by the figure of a lusty young swain, mounted on an apple-tree, with his basket and ladder, looking this way and that way, and listening to the

song, like another *Vertumnus*: Where is the park with it's statues, it's marbles, and it's bronzes, once to be compared with it?

O ye rich ! who wish to encompass yourselves with elysian scenery, let your park-walls enclose villages blest with rural felicity. What deserted tracks of land over the whole kingdom might present the same spectacle ! I have seen Brittany, and other provinces, covered as far as the eye could reach with heath, and where nothing grew but a species of prickly furze, black and yellowish. Our agricultural companies, which there to no purpose employ their large ploughs of new construction, have pronounced those regions to be smitten with perpetual sterility ; but these heaths discover, by the ancient divisions of the fields, and by the ruins of old huts and fences, that they have been formerly in a state of cultivation. They are at this day surrounded by farms in a thriving condition, on the self-same soil. How many others would be still more fruitful, such as those of Bourdeaux, which are covered over with great pines ! A soil which produces a tall tree is surely capable of bearing an ear of corn.

In speaking of the vegetable order, we have indicated the means of distinguishing the natural analogies of plants with each latitude and each soil. There is actually no soil whatever, were it mere sand, or mud, on which, through a particular kindness of Providence, some one or other of our domestic plants may not thrive. But the first step to be taken is to resow the woods which formerly sheltered those places, now exposed to the action of the winds, whereby the germ of every smaller plant is cankered as it shoots. These means however, and many others of a similar nature, belong not to the jurisdiction of insatiable companies, with their delineations on the great scale, neither are they consistent with provincial imposts and oppression ; they depend on the local and patient assiduity of families enjoying liberty, possessing property which they can call their own, not subjected to petty tyrants, but holding immediately of the Sovereign. By such patriotic means as these the Dutch have forced oaks to grow at Schevelling, a village in the neighbourhood of the Hague, in pure sea-land, of which I have had the evidence from my own eyes. I repeat an assertion already hazarded : It is not on the face of vast domains, but into the basket of the vintager, and the apron of the reaper,

that God pours down from Heaven the precious fruits of the Earth.

These extensive districts of land in the kingdom lying totally useless, have attracted the attention of sordid cupidity ; but there is a still greater quantity which has escaped it, from the impossibility of forming such tracks into marquisates or seignories ; and because likewise the great plough is not at all applicable to them. These are, among others, the stripes by the highway side, which are innumerable. Our great roads are, I admit, for the most part rendered productive, being skirted with elms. The elm is undoubtedly a very useful tree : it's wood is proper for cart-wright's work. But we have a tree which is far preferable to it, because it's wood is never attacked by the insect ; it is excellent for wainscotting, and it produces abundance of very nutritive food : it is the chesnut-tree I mean. A judgment may be formed of the duration and of the beauty of it's wood, from the ancient wainscotting of the market St. Germain, before it was burnt down. The joists were of a prodigious length and thickness, and perfectly sound though more than four hundred years old. The durable quality of this wood may still be ascertained, by examining the wainscotting of the ancient castle of Marcoussi, built in the time of *Charles VI.* about five leagues from Paris. We have of late entirely neglected this valuable tree, which is now allowed to grow only as coppice wood in our forests. It's port however is very majestic, it's foliage beautiful, and it bears such a quantity of fruit, in tiers multiplied one a-top of the other, that no spot of the same extent sown with corn, could produce a crop of subsistence so plentiful.*

It must be admitted, as we have seen, in discussing the characters of vegetables, that this tree takes pleasure only in dry and elevated situations ; but we have another adapted to the valleys and humid places, of not much inferior utility, whether we attend to the wood or to the fruit, and whose port is equally majestic : it is the walnut-tree. These beautiful trees would magnificently decorate our great roads. With them might

* The chesnut of America, though I think specifically different from that of Europe, is also a tree of great importance. It was, for a long time, much neglected by us : but it has, at length, begun to solicit both attention and protection from our farmers, &c.—B. S. B.

likewise be intermixed other trees peculiar to each district. They would announce to travellers the various provinces of the kingdom : the vine, Burgundy ; the apple-tree, Normandy ; the mulberry, Dauphiny ; the olive, Provence. Their stems loaded with produce, would determine much better than stakes furnished with iron collars, and than the tremendous gibbets of criminal justice, the limits of each province, and the gently diversified seignories of Nature.

It may be objected, that the crops would be gathered by passengers ; but they hardly ever touch the grapes in the vineyards which sometimes skirt the highway. Besides if they were to pick the fruit, what harm would be done ? When the King of Prussia ordered the sides of many of the great roads through Pomerania to be planted with fruit-trees, it was insinuated to him that the fruit would be stolen : “ The people,” replied he, “ at least will profit by it.” Our cross-roads present perhaps still more lost ground than the great highways. If it is considered, that by means of them the communication is kept up between the smaller cities, towns, villages, hamlets, abbeys, castles, and even single country-houses ; that several of them issue in the same place, and that every one must have at least the breadth of a chariot ; we shall find the whole space which they occupy to be of incredible magnitude. It would be proper to begin with applying the line to them ; for most of them proceed in a serpentine direction, which in many cases adds a full third to their length beyond what is necessary. I acknowledge at the same time, that these sinuosities are highly agreeable, especially along the declivity of a hill, over the ridge of a mountain, in rural situations, or through the midst of forests. But they might be rendered susceptible of another kind of beauty, by skirting them with fruit-trees which do not rise to a great height, and which, flying off in perspective, would give a greater apparent extension to the landscape. These trees would likewise afford a shade to travellers. The husbandmen I know allege, that the shade so grateful to passengers, is injurious to their standing corn. They are undoubtedly in the right, as to several sorts of grain ; but there are some which thrive better in places somewhat shaded than any where else, as may be seen in the *Pré Saint Gervais*. Besides, the farmer would be amply indemnified by the wood of the fruit-trees, and by the crops of fruit. The in-

terests even of the husbandman and of the traveller might farther be rendered compatible, by planting only the roads which go from North to South, and the south side of those which run East and West, so that the shade of their trees should scarcely fall on the arable lands.

It would be moreover necessary, in order to increase the national subsistence, to restore to the plough great quantities of land now in pasture. There is hardly such a thing as a meadow in all China, a country so extremely populous. The Chinese sow every where corn and rice, and feed their cattle with the straw. They say it is better that the beasts should live with Man, than Man with the beasts. The cattle are not the less fat for this. The German horses, the most vigorous of animals, feed entirely on straw cut short, with a small mixture of barley or oats. Our farmers are every day adopting practices the directly contrary of this economy. They turn, as I have observed in many provinces, a great deal of land which formerly produced corn into small grass farms, to save the expense of cultivation, and especially to escape the tithe, which their clergy do not receive from pasture-lands. I have seen in Lower Normandy immense quantities of land, thus forced out of it's natural state, greatly to the public detriment. The following anecdote was told me, on my taking notice of an ancient track of corn-land which had undergone a metamorphosis of this sort. The rector, vexed at losing part of his revenue, without having it in his power to complain, said to the owner of the land, by way of advice: "Master *Peter*, in my opinion, if you " would remove the stones from that ground, dung it well, " plough it thoroughly, and sow it with corn, you might still " raise very excellent crops." The farmer, an arch, shrewd fellow, perceiving the drift of his tithing-man, replied: " You " are in the right, good Mr. Rector; if you will take the ground " and do all this to it, I shall ask no more of you than the tithe " of the crop."

Our agriculture will never attain all the activity of which it is susceptible unless it is restored to it's native dignity. Means ought therefore to be employed to induce a multitude of easy and idle burghers, who vegetate in our small cities, to go and live in the country. In order to determine them to this, husbandmen ought to be exempted from the humiliating imposi-

tions of tallage, of seignorial exactions, and even of those of the militia-service, to which they are at present subjected. The state must undoubtedly be served, when necessity requires; but wherefore affix characters of humiliation to the services which she imposes? Why not accept a commutation in money? It would require a great deal, our Politicians tell us. Yes, undoubtedly. But do not our Burgesses likewise pay many imposts in our towns, in lieu of these very services? Besides, the more inhabitants that there are scattered over the country, the lighter will fall the burthen on those who are assessable. A man properly brought up, would much rather be touched in his purse, than suffer in his self-love.

By what fatal contradiction have we subjected the greatest part of the lands of France to soccage-tenures, while we have ennobled those of the New World? The same husbandman who in France must pay tallage, and go with the pick-axe in his hand to labour on the high-road, may introduce his children into the King's Household, provided he is an inhabitant of one of the West-India Islands. This injudicious dispensation of nobility has proved no less fatal to those foreign possessions, into which it has introduced slavery, than to the lands of the Mother-Country, the labourers of which it has drained of many of their resources. Nature invited into the wildernesses of America the overflowings of the European Nations: she had there disposed every thing, with an attention truly maternal, to indemnify the Europeans for the loss of their country. There is no necessity, in those regions, for a man to scorch himself in the Sun while he reaps his grain, nor to be benumbed with cold in tending his flocks as they feed, nor to cleave the stubborn earth with the clumsy plough to make it produce aliment for him, nor to rake into it's bowels to extract from thence iron, stone, clay, and the first materials of his house and furniture. Kind Nature has there placed on trees, in the shade, and within the reach of the hand, all that is necessary and agreeable to human life. She has there deposited milk and butter in the nuts of the cocoa-tree; perfumed creams in the apples of the *atte*; table linen and provision in the large sattiny leaves, and in the delicious figs, of the banana; loaves ready for the fire in the potatoes, and the roots of the manioc; down finer than the wool of the fleecy sheep in the shell of the cotton plant; dishes

of every form in the gourds of the calabasse. She had there contrived habitations, impenetrable by the rain and by the rays of the Sun, under the thick branches of the Indian fig-tree, which rising toward Heaven, and afterwards descending down to the ground where they take root, form by their continued arcades palaces of verdure. She had scattered about, for the purposes at once of delight and of commerce, along the rivers, in the bosom of the rocks, and in the very bed of torrents, the maize, the sugar-cane, the chocolate-nut, the tobacco-plant, with a multitude of other useful vegetables, and from the resemblance of the Latitudes of this New World to that of the different countries of the Old, she promised it's future inhabitants to adopt, in their favour, the coffee-plant, the indigo, and the other most valuable vegetable productions of Africa and of Asia. Wherefore has the ambition of Europe inundated those happy climates with the tears and the blood of the human race? Ah! had liberty and virtue collected and united their first planters, how many charms would French industry have added to the natural fecundity of the soil, and to the happy temperature of the tropical regions!

No fogs or excessive heats are there to be dreaded; and though the Sun passes twice a year over their Zenith, he every day brings with him, as he rises above the Horizon, along the surface of the Sea, a cooling breeze which all day long refreshes the mountains, the forests, and the valleys. What delicious retreats might our poor soldiers and possessionless peasants find in those fortunate islands! What expense in garrisons might there have been spared! What petty seignories might there have become the recompense either of gallant officers, or of virtuous citizens! What nurseries of excellent seamen might be formed by the turtle-fishery, so abundant on the shallows surrounding the islands, or by the still more extensive and profitable cod-fishery on the banks of Newfoundland! It would not have cost Europe much more than the expense of the settlement of the first families. With what facility might they have been successively extended to the most remote distances, by forming them after the manner of the Caraihs themselves, one after another, and at the expense of the community! Undoubtedly had this natural progression been adopted, our power

would at this day have extended to the very centre of the American Continent, and could have bidden defiance to every attack.

Government has been taught to believe that the independence of our colonies would be a necessary consequence of their prosperity, and the case of the Anglo-American colonies has been adduced in proof of this. But these colonies were not lost to Great Britain because she had rendered them too happy ; it was on the contrary because she oppressed them. Britain was besides guilty of a great error, by introducing too great a mixture of strangers among her colonists. There is farther a remarkable difference between the genius of the English and ours. The Englishman carries his country with him wherever he goes : if he is making a fortune abroad, he embellishes his habitation in the place where he is settled, introduces the manufactures of his own Nation into it, there he lives, and there he dies ; or if he returns to his country, he fixes his residence near the place of his birth. The Frenchman does not feel in the same manner : all those whom I have seen in the Islands, always consider themselves as strangers there. During a twenty years residence in one habitation they will not plant a single tree before the door of the house, for the benefit of enjoying it's shade ; to hear them talk, they are all on the wing to depart next year at farthest. If they actually happen to acquire a fortune away they go, nay frequently without having made any thing, and on their return home settle, not in their native province or village, but at Paris.

This is not the place to unfold the cause of that national aversion to the place of birth, and of that predilection in favour of the Capital ; it is an effect of several moral causes, and among others of education. Be it as it may, this turn of mind is alone sufficient to prevent for ever the independence of our colonies. The enormous expense of preserving them, and the facility with which they are captured, ought to have cured us of this prejudice. They are all in such a state of weakness, that if their commerce with the Mother-country were to be interrupted but for a few years, they would presently be distressed for want of many articles essentially necessary. It is even singularly remarkable, that they do not manufacture there a single production of the country. They raise cotton of the very finest quality.

but make no cloth of it as in Europe ; they do not so much as practice the art of spinning it, as the savages do ; nor do they, like them, turn to any account the threads of *pitte*, of those of the banana, or of the leaves of the palmist. The cocoa-tree, which is a treasure to the East-Indies, comes to great perfection in our islands, and scarcely any use is made of the fruit, or of the threaden husk that covers it. They cultivate indigo, but employ it in no process whatever of dying. Sugar then is the only article of produce which is there pursued through the several necessary processes, because it cannot be turned to commercial account till it is manufactured ; and after all it must be refined in Europe before it attains a state of full perfection.

We have had, it must be admitted, some seditious insurrections in our Colonies ; but these have been much more frequent in their state of weakness than in that of their opulence. It is the injudicious choice of the persons sent thither which has at all times rendered them the seat of discord. How could it be expected that citizens who had disturbed the tranquillity of a long established state of Society, should concur in promoting the peace and prosperity of a rising community ? The Greeks and Romans employed the flower of their youth, and their most virtuous citizens, in the plantation of their colonies : and they became themselves kingdoms and empires. Far different is the case with us ; bachelor-soldiers, seamen, gownmen, and those of every rank ; officers of the higher orders, so numerous and so useless, have filled ours with the passions of Europe, with a rage for fashion, with unprofitable luxury, with corruptive maxims and licentious manners. Nothing of this kind was to be apprehended from our undebauched peasantry. Bodily labour soothes to rest the solitudes of the mind, fixes it's natural restlessness, and promotes among the people health, patriotism, religion and happiness. But admitting that in process of time these Colonies should be separated from France : Did Greece waste herself in tears when her flourishing Colonies carried her laws and her renown over the coasts of Asia, and along the shores of the Euxine Sea, and of the Mediterranean ? Did she take the alarm when they became the stems out of which sprung powerful kingdoms and illustrious republics ? Because they separated from her were they transformed into her enemies : and was she not, on the contrary, frequently protected by them ?

What harm would have ensued had shoots from the tree of France borne lilies in America, and shaded the New World with their majestic branches?

Let the truth be frankly acknowledged, Few men admitted to the councils of Princes take a lively interest in the felicity of Mankind. When sight of this great object is lost, national prosperity and the glory of the Sovereign quickly disappear. Our Politicians, by keeping the Colonies in a perpetual state of dependence, of agitation and penury, have discovered ignorance of the nature of Man, who attaches himself to the place which he inhabits only by the ties of the felicity which he enjoys. By introducing into them the slavery of the Negroes, they have formed a connexion between them and Africa, and have broken asunder that which ought to have united them to their poor fellow-citizens. They have farther discovered ignorance of the European character, which is continually apprehensive, under a warm climate, of seeing it's blood degraded like that of it's slaves; and which sighs incessantly after new alliances with it's compatriots, for keeping up in the veins of those little ones the circulation of the clear, and lively colour of the European blood, and the sentiment of country still more interesting. By giving them perpetually new civil and military rulers, magistrates entire strangers to them, who keep them under a severe yoke; men, in a word, eager to accumulate fortune, they have betrayed ignorance of the French character, which had no need of such barriers to restrain it to the love of country, seeing it is universally regretting it's productions, it's honours, nay it's very disorders. They have accordingly succeeded neither in forming colonists for America, nor patriots for France; and they have mistaken at once the interests of their Nation and of their Sovereigns, whom they meant to serve.

I have dwelt the longer on the subject of these abuses, that they are not yet beyond the power of remedy in various respects, and that there are still lands in the New World on which a change may be attempted in the nature of our establishments. But this is neither the time nor the place for unfolding the means of these. After having proposed some remedies for the physical disorders of the Nation, let us now proceed to the moral irregularity which is the source of them. The principal cause is the spirit of division which prevails between the diffe-

rent orders of the State. There are only two methods of cure; the first, to extinguish the motives to division, the second to multiply and increase the motives to union.

The greatest part of our Writers make a boast of our national spirit of society; and foreigners in reality look upon it as the most sociable in Europe. Foreigners are in the right, for the truth is we receive and caress them with ardor; but our Writers are under a mistake. Shall I venture to expose it? We are thus fond of strangers because we do not love our compatriots. For my own part I have never met with this spirit of union either in families or in associations, or in natives of the same province; I except only the inhabitants of a single province which I must not name; who as soon as they are got a little from home, express the greatest ardor of affection for each other, But as all the truth must out, it is rather from antipathy to the other inhabitants of the kingdom than from love to their compatriots, for, from time immemorial, that province has been celebrated for intestine divisions. In general, the real spirit of patriotism, which is the first sentiment of humanity, is very rare in Europe, and particularly among ourselves.

Without carrying this reasoning any farther, let us look for proofs of the fact which are level to every capacity. When we read certain relations of the customs and manners of the Nations of Asia, we are touched with the sentiment of humanity, which among them attracts men to each other, notwithstanding the phlegmatic taciturnity which reigns in their assemblies. If, for example, an Asiatic on a journey stops to enjoy his repast, his servants and camel-driver collect around him, and place themselves at his table. If a stranger happens to pass by, he too sits down with him, and after having made an inclination of the head to the master of the family, and given God thanks, he rises and goes on his way, without being interrogated by any one who he is, whence he comes, or whither he goes. This hospitable practice is common to the Armenians, to the Georgians, to the Turks, to the Persians, to the Siamese, to the Blacks of Madagascar, and to different Nations of Africa and of America. In those countries Man is still dear to Man.

At Paris, on the contrary, if you go into the dining-room of a Tavern, where there are a dozen tables spread, should twelve persons arrive one after another, you see each of them take his

place apart at a separate table, without uttering a syllable. If new guests did not successively come in, each of the first twelve would eat his morsel alone, like a Carthusian monk. For some time a profound silence prevails, till some thoughtless fellow put into good humor by his dinner, and pressed by an inclination to talk, takes upon him to set the conversation a-going. Upon this the eyes of the whole company are drawn toward the orator, and he is measured in a twinkling from head to foot. If he has the air of a person of consequence, that is rich, they give him the hearing. Nay he finds persons disposed to flatter him, by confirming his intelligence, and applauding his literary opinion, or his loose maxim. But if his appearance displays no mark of extraordinary distinction, had he delivered sentiments worthy of a *Socrates*, scarce has he proceeded to the opening of his thesis when some one interrupts him with a flat contradiction. His opponents are contradicted in their turn by other wits who think proper to enter the lists; then the conversation becomes general and noisy. Sarcasms, harsh names, perfidious insinuations, gross abuse, usually conclude the sitting; and each of the guests retires perfectly well-pleased with himself, and with a hearty contempt for the rest.

You find the same scenes acted in our coffee-houses, and on our public walks. Men go thither expressly to hunt for admiration, and to play the critic. It is not the spirit of Society which allures us toward each other, but the spirit of division. In what is called good company matters is still worse managed. If you mean to be well received you must pay for your dinner at the expense of the family with whom you supped the night before. Nay you may think yourself very well off if it costs you only a few scandalous anecdotes; and if, in order to be well with the husband, you are not obliged to bubble him, by making love to his wife!

The original source of these divisions is to be traced up to our mode of education. We are taught from earliest infancy to prefer ourselves to others, by continued suggestions to be the first among our school-companions. As this unprofitable emulation presents not to far the greatest part of the citizens, any career to be performed on the theatre of the World, each of them assumes a preference from his province, his birth, his rank, his figure, his dress, nay the tutelary saint of his parish.

Hence proceed our social animosities, and all the insulting nicknames given by the Norman to the Gascogn, by the Parisian to the Champenois, by the man of family to the man of no family, by the Lawyer to the Ecclesiastic, by the Jansenist to the Molinist, and so on. The man asserts his pre-eminence, especially, by opposing his own good qualities to the faults of his neighbour. This is the reason that slander is so easy, so agreeable, and that it is in general the master-spring of our conversations.

A person of high quality one day said to me, that there did not exist a man, however wretched, whom he did not find superior to himself in respect of some advantage whereby he surpasses persons of our condition, whether it be as to youth, health, talents, figure, or in short some one good quality or another, whatever our superiority in other respects may be. This is literally true ; but this manner of viewing the members of a Society belongs to the province of virtue, and that is not ours. The contrary maxim being equally true, our pride lays hold of that, and finds a determination to it from the manners of the World, and from our very education, which from infancy suggests the necessity of this personal preference.

Our public spectacles farther concur toward the increase of the spirit of division among us. Our most celebrated comedies usually represent tutors cozened by their pupils, fathers by their children, husbands by their wives, masters by their servants. The shows of the populace exhibit nearly the same pictures ; and as if they were not already sufficiently disposed to irregularity, they are presented with scenes of intoxication, of lewdness, of robbery, of constables drubbed : these instruct them to under-value at once morals and magistrates. Spectacles draw together the bodies of the citizens, and alienate their minds.

Comedy, we are told, cures vice by the power of ridicule ; *castigat ridendo mores*. This adage is equally false with many others which are made the basis of our morality. Comedy teaches us to laugh at another, and nothing more. No one says, when the representation is over, the portrait of this miser has a strong resemblance of myself ; but every one instantly discerns in it the image and likeness of his neighbour. It is long since *Horace* made this remark. But on the supposition that a man should perceive himself in the dramatic representation, I do not perceive how the reformation of vice would ensue. How could

it be imagined that the way for a physician to cure his patient, would be to clap a mirror before his face, and then laugh at him? If my vice is held up as an object of ridicule, the laugh, so far from giving me a disgust at it, plunges me in the deeper. I employ every effort to conceal it; I become a hypocrite: without taking into the account, that the laugh is much more frequently levelled against virtue than against vice. It is not the faithless wife, or profligate son, who is held up to scorn, but the good-natured husband or the indulgent father. In justification of our own taste we refer to that of the Greeks; but we forget that their idle spectacles directed the public attention to the most frivolous objects; that their stage frequently turned into ridicule the virtue of the most illustrious citizens; and that their scenic exhibitions multiplied among them the aversions and the jealousies which accelerated their ruin.

Not that I would represent laughing as a crime, or that I believe, with *Hobbes*, it must proceed from pride. Children laugh, but most assuredly not from pride. They laugh at sight of a flower, at the sound of a rattle. There is a laugh of joy, of satisfaction, of composure. But ridicule differs widely from the smile of Nature. It is not, like this last, the effect of some agreeable harmony in our sensations, or in our sentiments: but it is the result of a harsh contrast between two objects, of which the one is great, the other little; of which the one is powerful and the other feeble. It is remarkably singular that ridicule is produced by the very same oppositions which produce terror; with this difference, that in ridicule the mind makes a transition from an object that is formidable to one that is frivolous, and in terror, from an object that is frivolous to one that is formidable. The aspic of *Cleopatra* in a basket of fruit; the fingers of the hand which wrote, amidst the madness of a festivity, the doom of *Belshazzar*; the sound of the bell which announces the death of *Clarissa*; the foot of a savage imprinted in a desert island upon the sand, scare the imagination infinitely more than all the horrid apparatus of battles, executions, massacres, and death. Accordingly, in order to impress an awful terror, a frivolous and unimportant object ought to be first exhibited; and in order to excite excessive mirth, you ought to begin with a solemn idea. To this may be farther added some other contrast, such as that of surprize, and some one of those sentiments

which plunge us into infinity, such as that of mystery ; in this case the soul, having lost it's equilibrium, precipitates itself into terror, or into mirth, according to the arrangement which has been made for it.

We frequently see these contrary effects produced by the same means. For example, if the nurse wants her child to laugh, she shrowds her head in her apron ; upon this the infant becomes serious ; then all at once she shews her face, and he bursts into a fit of laughter. If she means to terrify him, which is but too frequently the case, she first smiles upon the child, and he returns it : then all at once she assumes a serious air, or conceals her face, and the child falls a-crying.

I shall not say a word more respecting these violent oppositions, but shall only adduce this consequence from them, that it is the most wretched part of Mankind which has the greatest propensity to ridicule. Terrified by political and moral phantoms, they endeavour first of all to drown respect for them ; and it is no difficult matter to succeed in this : for Nature, always at hand to succour oppressed humanity, has blended in most things of human institution, the effusions of ridicule with those of terror. The only thing requisite is to invert the objects of their comparison. It was thus that *Aristophanes*, by his comedy of *The Clouds*, subverted the religion of his country. Attend to the behaviour of lads at college ; the presence of the master at first sets them a-trembling : What contrivance do they employ to familiarize themselves to his idea ? They try to turn him into ridicule, an effort in which they commonly succeed to admiration. The love of ridicule in a people is by no means therefore a proof of their happiness, but on the contrary of their misery. This accounts for the gravity of the ancient Romans ; they were serious, because they were happy : but their descendants, who are at this day very miserable, are likewise famous for their pasquinades, and supply all Europe with harlequins and buffoons.

I do not deny that spectacles, such as tragedies, may have a tendency to unite the citizens. The Greeks frequently employed them to this effect. But by adopting their dramas we deviate from their intention. Their theatrical representations did not exhibit the calamities of other Nations, but those which they themselves had endured, and events borrowed from the History

of their own country. Our tragedies excite a compassion whose object is foreign to us. We lament the distresses of the family of *Agamemnon*, and we behold without shedding one tear those who are in the depth of misery at our very door. We do not so much as perceive their distresses, because they are not exhibited on a stage. Our own heroes nevertheless well represented in the theatre, would be sufficient to carry the patriotism of the people to the very height of enthusiasm. What crowds of spectators have been attracted, and what bursts of applause excited, by the heroism of *Eustace Saint-Pierre*, in the Siege of Calais ! The death of *Joan of Arc* would produce effects still more powerful, if a man of genius had the courage to efface the ridicule which has been lavished on that respectable and unfortunate young woman, to whose name Greece would have consecrated altar upon altar.

I will deliver my thoughts on the subject, in a few words, if perhaps it may incite some virtuous man to undertake it. I could wish them without departing from the truth of History, to have her represented at the moment when she is honoured with the favour of her Sovereign, the acclamations of the army, and at the very pinnacle of glory, deliberating on her return to an obscure hamlet, there to resume the employments of a simple shepherdess, unnoticed and unknown. Solicited afterwards by *Dunois*, she determines to brave new dangers in the service of her country. At last, made prisoner in an engagement, she falls into the hands of the English. Interrogated by inhuman judges, among whom are the Bishops of her own Nation, the simplicity and innocence of her replies render her triumphant over the insidious questions of her enemies. She is adjudged by them to perpetual imprisonment. I would have a representation of the dungeon in which she is doomed to pass the remainder of her miserable days, with it's long spiracles, it's iron grates, it's massy arches, the wretched truckle-bed provided for her repose, the cruise of water and the black bread which are to serve her for food. I would draw from her own lips the touchingly plaintive reflections suggested by her condition, on the nothingness of human grandeur, her innocent expressions of regret for the loss of rural felicity ; and then the gleams of hope of being relieved by her Prince, extinguished by despair at sight of the fearful abyss which has closed over her head.

I would then display the snare laid for her by her perfidious enemies while she was asleep, in placing by her side the arms with which she had combatted them. She perceives on awakening those monuments of her glory. Hurried away by the passion at once of a woman and of a hero, she covers her head with the helmet, the plume of which had shewn the dispirited French army the road to victory ; she grasps with her feeble hands that sword so formidable to the English ; and at the instant when the sentiment of her own glory is making her eyes to overflow with tears of exultation, her dastardly foes suddenly present themselves, and unanimously condemn her to the most horrible of deaths. Then it is we should behold a spectacle worthy of the attention of Heaven itself, virtue conflicting with extreme misery ; we should hear her bitter complaints of the indifference of her Sovereign whom she had so nobly served ; we should see her perturbation at the idea of the horrid punishment prepared for her, and still more at the apprehension of the calumny which is for ever to sully her reputation ; we should hear her, amidst conflicts so tremendous, calling in question the existence of a Providence, the protector of the innocent.

To death at last however walk out she must. At that moment it is I could wish to see all her courage rekindle. I would have her represented on the funeral pile, where she is going to terminate her days, looking down on the empty hopes with which the World amuses those who serve it ; exulting at the thought of the everlasting infamy with which her death will clothe her enemies, and of the immortal glory which will for ever crown the place of her birth, and even that of her execution. I could wish that her last words, animated by Religion, might be more sublime than those of *Dido*, when she exclaims on the fatal pile :—*Exoriare aliquis nostris ex ossibus ultor*, “ Start up some dire avenger from these bones.”

I could wish, in a word, that this subject, treated by a man of genius, after the manner of *Shakespeare*,* which undoubted-

* The compliment here paid to *Shakespeare* is justly merited ; and how well he could have managed the story of the Maid of Orleans, had he taken the incidents as *St. Pierre* has stated them, and written with the partiality of a Frenchman, may be ascertained by the masterly touches which he actually has bestowed on this distinguished character, in his First Part of *Henry VI*.

ly he would not have failed to do had *Joan of Arc* been an English-woman, might be wrought up into a patriotic Drama; in order that this illustrious shepherdess may become with us the patroness of War, as Saint *Genevieve* is that of Peace; I would have the representation of her tragedy reserved for the perilous situations in which the State might happen to be involved, and then exhibited to the people, as they display, in similar cases,

It may afford some amusement to compare the above prose sketch by our Author, with the poetical painting of our immortal Bard, in the Drama now mentioned. I take the liberty to transcribe only the scene in which the audience is prepared for her entrance, and that in which she actually makes her appearance. For the rest, the Reader is referred to the Play itself.—H. H.

Enter the BASTARD OF ORLEANS to the DAUPHIN, ALENCON, and REIGNIER.

Bast. Where's the Prince Dauphin? I have news for him.

Dau. Bastard of Orleans, thrice welcome to us.

Bast. Methinks your looks are sad, your cheer appall'd;
Hath the late overthrow wrought this offence?

Be not dismay'd, for succour is at hand:

A holy maid hither with me I bring,

Which, by a vision sent to her from Heaven,

Ordained is to raise this tedious siege,

And drive the English forth the bounds of France

The spirit of deep prophecy she hath,

Exceeding the nine Sybils of old Rome;

What's past, and what's to come, she can descry.

Speak, shall I call her in? Believe my words,

For they are certain and infallible.

Dau. Go, call her in: But first, to try her skill,

Reignier, stand thou as Dauphin in my place:

Question her proudly, let thy looks be stern;

By this means shall we sound what skill she hath.

Enter JOAN LA PUCELLE.

Reig. Fair maid, is't thou will do these wond'rous feats?

Pucel. Reignier, is't thou that thinkest to beguile me?

Where is the Dauphin?—Come, come from behind!

I know thee well, though never seen before.

Be not amazed, there's nothing hid from me:

In private will I talk with thee apart;—

Stand back, you Lords, and give us leave awhile.

Reig. She takes upon her bravely at first dash.

Pucel. Dauphin, I am by birth a shepherd's daughter,

My wit untrain'd in any kind of art.

Heaven, and our Lady gracious, hath it pleas'd

to the people of Constantinople, the standard of *Mahomet*; and I have no doubt that, at sight of her innocence, of her services, of her misfortunes, of the cruelty of her enemies and of the horrors of her execution, our people, in a transport of fury would exclaim: "War, war with the English!"*

Such means as these, though more powerful than draughts for the militia, and than either pressing or tricking men into the

To shine on my contemptible estate :

Lo, whilst I waited on my tender lambs,

And to Sun's parching heat display'd my cheeks,

God's mother deigned to appear to me ;

And, in a vision full of majesty,

Will'd me to leave my base vocation,

And free my country from calamity :

Her aid she promis'd and assur'd success :

In complete glory she reveal'd herself ;

And, whereas I was black and swart before,

With those clear rays which she infus'd on me,

That beauty am I blest with, which you see on me.

Ask me what question thou canst possible,

And I will answer unpremeditated :

My courage try by combat if thou dar'st,

And thou shalt find that I exceed my sex.

Resolve on this : Thou shalt be fortunate

If thou receive me for thy warlike mate.

—Assign'd I am to be the English scourge.

This night the siege assuredly I'll raise :

Expect Saint Martin's Summer, halcyon days,

Since I have enter'd thus into these wars.

Glory is like a circle in the water,

Which never ceases to enlarge itself,

'Till by broad spreading it disperse to nought.

With *Henry's* death the English circle ends ;

Dispersed are the glories it included.

Now am I like that proud insulting ship,

Which *Cæsar* and his fortune bare at once.

* God forbid I should mean to rouse a spirit of animosity in our people against the English, now so worthy of all our esteem. But as their Writers, and even their Government, have in more instances than one, descended to exhibit odious representations of us on their stage, I was willing to shew them how easily we could make reprisals. Rather, may the genius of *Fenelon* which they prize so highly, that one of their most amiable fine writers, Lord *Lytleton*, exalts it above that of *Plato*, one day unite our hearts and minds !

service, are still insufficient to form real citizens. We are accustomed by them to love virtue and our country, only when our heroes are applauded on the theatre. Hence it comes to pass, that the greatest part even of persons of the better sort are incapable of appraising an action till they see it detailed in some journal, or moulded into a drama. They do not form a judgment of it after their own heart, but after the opinion of another ; not as it is in reality, and in it's own place, but as clothed with imagery, and fitted to a frame. They delight in heroes when they are applauded, powdered and perfumed ; but were they to meet with one pouring out his blood in some obscure corner, and perishing in unmerited ignominy, they would not acknowledge him to be a hero. Every one would wish to be the *Alexander* of the opera, but no one the *Alexander* in the city of the Mallians.*

Patriotism ought not to be made too frequently the subject of scenic representation. A heroism ought to be supposed to exist which braves death, but which is never talked of. In order therefore to replace the people, in this respect, in the road of Nature and of Virtue, they should be made to serve as a spectacle to themselves. They ought to be presented with realities and not fictions ; with soldiers and not comedians ; and if it be impossible to exhibit to them the terrible spectacle of a real engagement, let them see at least a representation of the evolutions and the vicissitudes of one, in military festivals.

The soldiery ought to be united more intimately with the Nation, and their condition rendered more happy. They are but too frequently the subjects of contention in the provinces through which they pass. The spirit of corps animates them to such a degree, that when two regiments happen to meet in the same city, an infinite number of duels is generally the consequence. Such ferocious animosities are entirely unknown in Prussian and Russian regiments, which I consider as in many respects the best troops in Europe. The King of Prussia has contrived to inspire his soldiers, not with the spirit of corps which divides them, but with the spirit of country which unites them. This he has been enabled to accomplish by conferring on them most of the civil employments in his kingdom, as the

* See *Plutarch's Life of Alexander*.

recompense of military services. Such are the political ties by which he attaches them to their country. The Russians employ only one, but it is still more powerful, I mean Religion. A Russian soldier believes that to serve his sovereign is to serve God. He marches into the field of battle like a neophyte to martyrdom, in the full persuasion that if he falls in it he goes directly to paradise.

I have heard *M. de Villebois*, Grand Master of the Russian artillery, relate, that the soldiers of his corps, who served in a battery in the affair of Zornedorff, having been mostly cut off, the few who remained, seeing the Prussians advance with bayonets fixed, unable to make any farther resistance, but determined not to fly, embraced their guns, and suffered themselves to be all massacred, in order to preserve inviolate the oath which they are called upon to take when received into the artillery, namely never to abandon their cannon. A resistance so pertinacious stripped the Prussians of the victory which they had gained, and made the King of Prussia acknowledge that it was easier to kill the Russians than to conquer them. This heroic intrepidity is the fruit of Religion.

It would be a very difficult matter to restore this power to its proper elasticity among the French soldiery, who are formed in part of the dissolute youth of our great towns. The Russian and Prussian soldiers are draughted from the class of the peasantry, and value themselves upon their condition. With us on the contrary a peasant is terrified lest his son should be obliged to go for a soldier. Administration on its part contributes toward the increase of this apprehension. If there be a single blackguard in a village, the deputy takes care that the black ball shall fall upon him, as if a regiment were a galley for criminals.

I once composed on this subject a memorial which suggested proposals of a remedy for these disorders, and for the prevention of desertion among our soldiers; but like many other things of the same sort it came to nothing. The principal means of reform which I proposed, were a melioration of the condition of the soldiery, as in Prussia, by holding up the prospect of civil employments. These with us are infinite in number; and, in order to prevent the irregularities into which they are thrown by a life of celibacy, I proposed to grant them permission to

marry, as most of the Russian and Prussian soldiers do.* This method, so much adapted to the reformation of manners, would farther contribute toward conciliating our provinces to each other, by the marriages which regiments would contract in their continual progress from place to place. They would strengthen the bands of national affection from North to South ; and our peasantry would cease to be afraid of them, if they saw them marching through the country as husbands and fathers. If the soldiery are sometimes guilty of irregularities, to our military institutions the blame must be imputed. I have seen others under better discipline, but I know of none more generous.

I was witness to a display of humanity on their part, of which I doubt whether any other soldiery in Europe would have been capable. It was in the year 1760, in a detachment of our army then in Germany, and an enemy's country, encamped hard by an inconsiderable city called Stadberg. I lodged in a miserable village occupied by the head-quarters. There were in the poor cottage where I and two of my comrades had our lodgings, five or six women, and as many children, who had taken refuge there, and who had nothing to eat, for our army had foraged their corn, and cut down their fruit-trees. We gave them some of our provisions ; but what we could spare was a small matter indeed, considering both their numbers and their necessities. One of them was a young woman big with child, who had three or four children beside. I observed her go out every morning, and return some hours after, with her apron full of slices of brown bread. She strung them on packthreads, and dried

* I could likewise wish that the wives of sailors might be permitted to go to sea with their husbands ; they would prevent on ship-board more than one species of irregularity. Besides they might be usefully engaged in a variety of employments suitable to their sex, such as dressing the victuals, washing the linen, mending the sails, and the like.....They might, in many cases, co-operate in the labours of the ship's crew. They are much less liable to be affected by the scurvy, and by various other disorders, than men are.

The project of embarking women will no doubt appear extravagant to persons who do not know that there are, at least, ten thousand women who navigate the coasting vessels of Holland ; who assist on deck in working the ship, and manage the helm as dexterously as any man. A handsome woman would undoubtedly prove the occasion of much mischief on board a French ship ; but women, such as I have been describing, hardy and laborious, are exceedingly proper on the contrary to prevent or remedy many kinds of mischief, which are already but too prevalent in a sea life.

them in the chimney like mushrooms. I had her questioned one day by a servant of ours, who spoke German and French, where she found that provision, and why she put it through that process. She replied, that she went into the camp to solicit alms among the soldiers ; that each of them gave her a piece of his ammunition-bread, and that she dried the slices in order to preserve them ; for she did not know where to look for a supply after we were gone, the country being utterly desolated.

A soldier's profession is a perpetual exercise of virtue, from the necessity to which it constantly subjects the man to submit to privations innumerable, and frequently to expose his life. It has Religion therefore for it's principal support. The Russians keep up the spirit of it in their national troops, by admitting among them not so much as one foreign soldier. The King of Prussia on the contrary has accomplished the same purpose by receiving into his, soldiers of every religion ; but he obliges every one of them exactly to observe that which he has adopted. I have seen, both at Berlin and at Potsdam, every Sunday morning, the officers mustering their men on the parade about eleven o'clock, and then filing off with them in separate detachments, Calvinists, Lutherans, Catholics, every one to his own church, to worship GOD in his own way.

I could wish to have abolished among us the other causes of division, which lay one citizen under the temptation, that he may live himself, to wish the hurt or the death of another. Our politicians have multiplied without end these sources of hatred, may have rendered the State an accomplice in such ungracious sentiments, by the establishment of lotteries, of tontines, and of annuities. "So many persons," say they, "have died this year ;" "the State has gained so much." Should a pestilence come, and sweep off one half of the people, the State would be wonderfully enriched ! Man is nothing in their eyes ; gold is all in all. Their art consists in reforming the vices of Society by violences offered to Nature : and, what is passing strange, they pretend to act after her example. "It is her intention," they gravely tell you, "that every species of being should subsist only by the "ruin of other species. Particular evil is general good." By such barbarous and erroneous maxims are Princes misled. These Laws have no existence in Nature, except between species which are opposite and inimical. They exist not in the

same species of animals, which live together in a state of Society. The death of a bee most assuredly never tended to promote the prosperity of the hive. Much less still can the calamity and death of a man be of advantage to his Nation, and to Mankind, the perfect happiness of which must consist in a complete harmony between its members. We have demonstrated in another place, that it is impossible the slightest evil should befall a simple individual, without communicating the impression of it to the whole body politic.

Our rich people entertain no doubt that the good things of the lower orders will reach them, as they enjoy the productions of the arts which the poor cultivate ; but they participate equally in the ills which the poor suffer, let them take what precautions they will to secure themselves. Not only do they become the victims of their epidemical maladies, and of their pillage, but of their moral opinions, which are ever in a progress of depravation in the breasts of the wretched. They start up like the plagues which issued from the box of *Pandora*, and in defiance of armed guards, force their way through fortresses and castle-walls, and fix their residence in the heart of tyrants. In vain do they dream of personal exemption from the ills of the vulgar ; their neighbours catch the infection, their servants, their children, their wives, and impose the necessity of abstinence from every thing, in the very midst of their enjoyments.

But when, in a Society, particular bodies are constantly converting to their own profit the distresses of others, they perpetuate these very distresses, and multiply them to infinity. It is a fact easily ascertained, that wherever advocates and physicians peculiarly abound, law-suits and diseases there likewise are found in uncommon abundance. Though there be among them men of the best dispositions, and of the soundest intellect, they do not set their faces against irregularities which are beneficial to their corps.

These inconveniences are by no means desperate ; I am able to quote instances to this effect, which no sophistry can invalidate. On my entering into the service of Russia, the first month's revenue of my place was stopped, as a complete indemnification for the expense attending the treatment of every kind of malady with which I might be attacked ; and this included, together with myself, my servants, and my family, if I

should happen to marry ; and extended to every possible expense of Physician, Surgeon and Apothecary. There was farther stopped for the same object, a small sum, amounting to one, or one and a half per cent. of my appointments : this was to have been paid annually ; and every step higher I might have risen, I was to have given an additional month's pay of that superior rank. This is the complete amount of the tax upon officers, in consideration of which they and their families are entitled to every kind of medical advice and assistance under whatever indisposition.

The Physicians and Surgeons of every corps have at the same time a sufficiently ample revenue arising from these payments. I recollect that the Physician of the corps in which I served had an annual income of a thousand roubles, or five thousand livres (about two hundred guineas), and little or nothing to do for it ; for as our maladies brought him nothing they were of very short duration. As to the soldiers, if my recollection is accurate, they are medically treated without any defalcation of their pay. The grand Dispensary belongs to the Emperor. It is in the city of Moscow, and consists of a magnificent pile of building. The medicines are deposited in vases of porcelain, and are always of the very best quality. They are thence distributed over the rest of the Empire at a moderate price, and the profit goes to the Crown. There is not the slightest ground to apprehend imposition in the conduct of this business. The persons employed in the preparation and distribution are men of ability, who have no kind of interest in adulterating them, and who, as they rise in a regular progression of rank and salary, are actuated with no emulation but that of discharging their duty with fidelity.*

* The insatiable thirst of gold and luxury might be allayed in the greatest part of our citizens, by presenting them with a great number of these political perspectives. They constitute the charm of petty conditions, by displaying to them the attractions of infinity, the sentiment of which, as we have seen, is so natural to the heart of Man. It is by means of these, that mechanics and small shop-keepers are much more powerfully attached, by moderate profits, to their contracted spheres, enlivened by hope, than the rich and great are to lofty situations, the term of which is before them. The process which passes in the head of the little, is something similar to the milk-maid's train of thought in the fable. With the price of this milk I will buy eggs ; eggs will give me chicks ; those chicks will grow up to hens ; I will

The example of *Peter* the Great challenges imitation; and the order which he has established among his troops, with respect to Physicians and Apothecaries, might be extended all over the kingdom, not only in the line of the medical profession, though even this would bring an immense increase of revenue to the State, but might also be usefully applied to the profession of the Law. It is greatly to be wished that Attorneys, Advocates, and Judges were paid by the State, and scattered over the whole kingdom, not for the purpose of arguing causes, but of settling them by reference. These arrangements might be extended to all descriptions of profession which subsist on the distress of the Public: then the whole body of the citizens, finding their repose and their fortune in the happiness of the State, would exert themselves to the uttermost to maintain it.

These causes, and many others, divide among us all the different classes of the Nation. There is not a single province, city, village, but what distinguishes the province, city, village next to it, by some injurious and insulting epithet. The same remark applies to the various ranks and conditions of Society. *Divide & impera*, Divide and govern, say our modern Politicians. This maxim has ruined Italy, the country from whence it came. The opposite maxim contains much more truth. The more united citizens are the more powerful and happy is the Nation which they compose. At Rome, at Sparta, at Athens, a citizen was at once advocate, senator, pontiff, edile, husbandman, warrior, and even seaman. Observe to what a height of power those republics advanced. Their citizens were however far inferior to us in respect of general knowledge, but they were instructed in two great Sciences of which we are ignorant, namely the love of the Gods and of their Country. With these sublime sentiments they were prepared for every thing. Where

sell my poultry, and buy a lamb, and so on. The pleasure which they enjoy, in pursuing those endless progressions, is the sweet illusion that carries them through their labours; and it is so real, that when they happen to accumulate a fortune, and are able to live in ease and affluence, their health gradually declines, and most of them terminate their days in languor and melancholy. Modern Politicians, revert then to Nature! The sweetest music is not emitted from flutes made of gold and silver, but from those which are constructed of simple reeds.

they are wanting Man is good for nothing. With all our encyclopedic literature, a great man with us, even in point of talents, would be but the fourth part at most of a Greek or a Roman. He would distinguish himself much more in supporting the honour of his particular profession, but very little in maintaining the honour of his country.

It is our wretched political constitution which produces in the State so many different centres. There was a time when we talked of our being republicans. Verily if we had not a King we should live in perpetual discord. Nay, how many Sovereigns do we make of one single and lawful Monarch! Every corps has its own, who is not the Sovereign of the Nation. How many projects are formed, and defeated, in the King's name! The King of the waters, and of the forests, is at variance with the King of the bridges and highways. The King of the colonies sanctions a plan of improvement, the King of the finances refuses to advance the money. Amidst these various conflicts of paramount authority, nothing is executed. The real King, the King of the People is not served.

The same spirit of division prevails in the Religion of Europe. What mischief has not been practised in the name of God! All acknowledge the One Supreme Being, who created the Heavens and the Earth, and Man; but each kingdom has it's own, who must be worshipped according to a certain ritual. To this God it is that each Nation in particular offers thanksgiving, on occasion of every battle. In his name it was that the poor Americans were exterminated. The God of Europe is clothed with terror, and devoutly adored. But where are the altars of the God of Peace, of the Father of Mankind, of Him who proclaims the glad tidings of the Gospel? Let our modern Politicians trumpet their own applause on the happy fruits of those divisions, and of an education dictated by ambition. Human life so fleeting and so wretched, passes away in this unremitting strife; and while the Historians of every Nation, well paid for their trouble, are extolling to Heaven the victories of their Kings and of their Pontiffs, the People are addressing themselves, in tears, to the God of the Human Race, and asking of Him the way in which they ought to walk, in order to reach his habitation at length, and to live a life of virtue and happiness upon the Earth.

The cause of the ills which we endure, I repeat it, is to be found in our vain-glorious Education; and in the wretchedness of the commonalty, which communicates a powerful influence to every new opinion, because they are ever expecting from novelty some mitigation of the pressure of inveterate woes. But as soon as they perceive that their opinions become tyrannical, in their turn, they presently renounce them: and this is the origin of their levity. Whenever they can find the means of living in ease and abundance, they will be no longer subject to these vicissitudes, as we have seen in the instance of the Dutch, who print and sell the theological, political, and literary controversies of all Europe, without being themselves in the least affected, as to their civil and religious opinions; and when our public education shall be reformed, the people will enjoy the happy and uninterrupted tranquillity of the nations of Asia.

Before I proceed to suggest my ideas on this subject, I take the liberty to propose some other means of general union. I shall consider myself as amply recompensed for the labour which my researches have cost me, if so much as a single one of my hints of reform shall be adopted.

OF PARIS.

It has already been observed, that few Frenchmen are attached to the place of their birth. The greatest part of those who acquire fortune in foreign countries, on their return, settle at Paris. This upon the whole is no great injury to the State. The slighter their attachment to their Country, the easier it is to fix them at Paris. One single point of union is necessary to a great Nation. Every country which has acquired celebrity by it's patriotism, has likewise fixed the centre of it in their Capital, and frequently in some particular monument of that Capital; the Jews had theirs at Jerusalem, and it's Temple; the Romans, theirs at Rome, and the Capitol; the Lacedemonians, theirs at Sparta, and in citizenship.

I am fond of Paris. Next to a rural situation, and a rural situation such as I like, I give Paris the preference to any thing I have ever seen in the World. I love that city not only on account of it's happy situation, because all the accommodations of human life are there collected, from its being the centre of all the powers of the kingdom, and for the other reasons which

made *Michael Montaigne* delight in it, but because it is the asylum and the refuge of the miserable. There it is that the provincial ambitions, prejudices, aversions, and tyrannies, are lost and annihilated. There a man may live in obscurity and liberty. There it is possible to be poor without being despised. The afflicted person is there decoyed out of his misery by the public gaity; and the feeble there feels himself strong in the strength of the multitude. Time was when, on the faith of our political Writers, I looked upon that city as too great. But I am now far from thinking that it is of sufficient extent, and sufficiently majestic, to be the capital of a kingdom so flourishing.

I could wish that, our sea-ports excepted, there were no city in France but Paris; that our provinces were covered only with hamlets, and villages, and sub-divided into small farms; and that, as there is but one centre in the kingdom, there might likewise be but one Capital. Would to GOD it were that of all Europe, nay of the whole Earth; and that, as men of all nations bring thither their industry, their passions, their wants, and their misfortunes, it should give them back, in fortune, or enjoyment, in virtues, and in sublime consolations, the reward of that asylum which they resort thither to seek!

Of a truth our mind, illuminated as it is at this day with such various knowledge, wants the nobly comprehensive grasp which distinguished our fore-fathers. Amidst their simple and Gothic manners, they entertained the idea, I believe, of rendering it the Capital of Europe. The traces of this design are visible in the names which most of their establishments bear, such as the Scottish College, the Irish, that of the Four Nations; and in the foreign names of the Royal household-troops. Behold that noble monument of antiquity, the church of Notre-Dame, built more than six hundred years ago, at a time when Paris did not contain one fourth part of the inhabitants with which it is now peopled; it is more vast, and more majestic than any thing of the kind which has been since reared. I could wish that this spirit of *Philip the august*, a Prince too little known in our frivolous age, might still preside over its establishments, and extend the use of them to all Nations. Not that but men of every Nation are welcome there, for their money; our enemies themselves may live quietly in it, in the very midst of war, provided they are rich; but above all, I could wish to render her

good and propitious to her own children. I do not know of any advantage which a Frenchman derives from having been born within her walls, unless it be, when reduced to beggary, that of having it in his power to die in one of her hospitals. Rome bestowed very different privileges on her citizens; the most wretched among them there enjoyed privileges and honours more ample than were communicated even to Kings, in alliance with the Republic.

It is pleasure which attracts the greatest part of strangers to Paris; and if we trace those vain pleasures up to their source, we shall find that they proceed from the misery of the People, and from the easy rate at which it is there possible to procure girls of the town, spectacles, modish finery, and the other productions which minister to luxury. These means have been highly extolled by modern politicians. I do not deny that they occasion a considerable influx of money into a country; but at the long run, neighbouring nations imitate them; the money of strangers disappears, but their debauched morals remain. See what Venice has come to, with her mirrors, her pomatums, her courtezans, her masquerades, and her carnival. The frivolous arts on which we now value ourselves have been imported from Italy, whose feebleness and misery they this day constitute.

The noblest spectacle which any Government can exhibit is that of a people laborious, industrious and content. We are taught to be well-read in books, in pictures, in algebra, in heraldry, and not in men. Connoisseurs are rapt with admiration at sight of a Savoyard's head painted by *Greuze*; but the Savoyard himself is at the corner of the street, speaking, walking, almost frozen to death, and no one minds him. That mother with her children around her form a charming group; the picture is invaluable: the originals are in a neighbouring garret without a farthing whereupon to subsist. Philosophers! ye are transported with delight, and well you may, in contemplating the numerous families of birds, of fishes, and of quadrupeds, the instincts of which are so endlessly varied, and to which one and the same Sun communicates life. Examine the families of men of which the inhabitants of the Capital consist, and you would be disposed to say, that each of them had borrowed it's manners, and it's industry, from some species of animal; so varied are their employments.

Walk out to yonder plain at the entrance of the city ; behold that general officer mounted on his prancing courser : he is reviewing a body of troops : see, the heads, the shoulders, and the feet of his soldiers, arranged in the same straight line ; the whole embodied corps has but one look, one movement. He makes a sign, and in an instant a thousand bayonets gleam in the air ; he makes another, and a thousand fires start from that rampart of iron. You would think, from their precision, that a single fire had issued from a single piece. He gallops round those smoke-covered regiments, at the sound of drums and fifes, and you have the image of *Jupiter's* eagle armed with the thunder, and hovering round Etna. A hundred paces from thence, behold an insect among men. Look at that puny chimney-sweeper, of the colour of soot, with his lantern, his cymbal, and his leathern greaves : he resembles a black-beetle. Like the one which in Surinam is called the lantern-bearer, he shines in the night, and moves to the sound of a cymbal. This child, those soldiers, and that general, are equally men ; and while birth, pride, and the demands of social life establish infinite differences among them, Religion places them on a level : she humbles the head of the mighty, by shewing them the vanity of their power ; and she raises up the head of the unfortunate, by disclosing to them the prospects of immortality : she thus brings back all men to the equality which Nature had established at their birth, and which the order of Society had disturbed.

Our Sybarites imagine they have exhausted every possible mode of enjoyment. Our moping, melancholy old men consider themselves as useless to the World ; they no longer perceive any other perspective before them but death. Ah ! paradise and life are still upon the earth for him who has the power of doing good.

Had I been blessed with but a moderate degree of fortune, I would have procured for myself an endless succession of new enjoyments. Paris should have become to me a second *Memphis*. It's immense population is far from being known to us. I would have had one small apartment in one of it's suburbs, adjoining to the great road ; another at the opposite extremity on the banks of the Seine, in a house shaded with willows and poplars ; another in one of it's most frequented streets ; a fourth in the mansion of a gardener, surrounded with apricot-trees,

figs, coleworts, and lettuces ; a fifth in the avenues of the city, in the heart of a vineyard, and so on.

It is an easy matter undoubtedly to find every where lodgings of this description, and at an easy rate ; but it may not be so easy to find persons of probity for hosts and neighbours. There is it must be admitted, much depravity among the lower orders ; but there are various methods which may be employed to find out such as are good and honest ; and with them I commence my researches after pleasure. A new *Diogenes*, I am set out in search of men. As I look only for the miserable, I have no occasion to use a lantern. I get up at day-break, and step to partake of a first mass, into a church still but half illumined by the day-light : there I find poor mechanics come to implore God's blessing on their day's labour. Piety, exalted above all respect to Man, is one assured proof of probity : cheerful submission to labour is another. I perceive, in raw and rainy weather, a whole family squat on the ground, and weeding the plants of a garden : * here again are good people. The night itself cannot conceal virtue. Toward midnight the glimmering of a lamp announces to me, through the aperture of a garret, some poor widow prolonging her nocturnal industry, in order to bring up, by the fruits of it, her little ones who are sleeping around her. These shall be my neighbours and my hosts. I announce myself to them as a wayfaring man, as a stranger, who wishes to breathe a little in that vicinity. I beseech them to accommodate me with part of their habitation, or to look out for an apartment that will suit me in the neighbourhood. I offer a good price, and am domesticated presently.

I am carefully on my guard, in the view of securing the attachment of those honest people, against giving them money for nothing, or by way of alms ; I know of means much more

* Persons employed in the culture of vegetables are in general a better sort of people. Plants have their theology impressed upon them. I one day however fell in with a husbandman who was an atheist. It is true he had not picked up his opinions in the fields, but from books. He seemed to be exceedingly well satisfied with his attainments in knowledge. I could not help saying to him at parting : " You have really gained a mighty point, in " employing the researches of your understanding to render yourself miserable ! "

In the hypothetical examples hereafter adduced, there is scarcely any one article of invention merely, except the good which I did not do

honourable to gain their friendship. I order a greater quantity of provision than is necessary for my own use, and the overplus turns to account in the family; I reward the children for any little services which they render me: I carry the whole household, of a holiday, into the country, and sit down with them to dinner upon the grass; the father and mother return to town in the evening well refreshed, and loaded with a supply for the rest of the week. On the approach of Winter, I clothe the children with good woollen stuffs, and their little warmed limbs bless their benefactor, because my haughty vain-glorious bounty has not frozen their heart. It is the god-father of their little brother who has made them a present of the clothes. The less closely you twist the bands of gratitude, the more firmly do they contract of themselves.

I enjoy not only the pleasure of doing good, and of doing it in the best manner, I have the farther pleasure of amusing and instructing myself. We admire in books the labours of the artisan, but books rob us of half our pleasure, and of the gratitude which we owe them. They separate us from the People, and they impose upon us, by displaying the arts with excessive parade, and in false lights, as subjects for the theatre, and for the magic-lantern. Besides, there is more knowledge in the head of an artisan than in his art, and more intelligence in his hands than in the language of the Writer who translates him. Objects carry their own expression upon them: *Rem verba sequuntur* (words follow things). The man of the commonalty has more than one way of observing and of feeling, which is not a matter of indifference. While the Philosopher rises as high into the clouds as he possibly can, the other keeps contentedly at the bottom of the valley, and beholds very different perspectives in the World. Calamity forms him at the length as well as another man. His language purifies with years; and I have frequently remarked that there is very little difference, in point of accuracy, of perspicuity, and of simplicity, between the expressions of an aged peasant and of an old courtier. Time effaces from their several styles of language, and from their manners, the rusticity and the refinement which Society had introduced. Old-age, like infancy, reduces all men to a level, and gives them back to Nature.

In one of my encampments, I have a landlord who has made the tour of the Globe. He has been seaman, soldier, buccanier. He is sagacious as *Ulysses*, but more sincere. When I have placed him at table with me, and made him taste my wine, he gives me a relation of his adventures. He knows a multitude of anecdotes. How many times was he on the very point of making his fortune, but failed ! He is a second *Ferdinand Mendez Pinto*. The upshot of all is, he has got a good wife and lives contented.

My landlord, in another of my stations, has lived a very different life ; he scarcely ever was beyond the walls of Paris, and but seldom beyond the precincts of his shop. But though he has not travelled over the World, he has not missed his share of calamity by staying at home. He was very much at his ease ; he had laid up, by means of his honest savings, fifty good Louis d'or, when one night his wife and daughter thought proper to elope carrying his treasure with them. He had almost died with vexation. Now, he says, he thinks no more about it ; and cries as he tells me the story. I compose his mind by talking kindly to him ; I give him employment ; he tries to dissipate his chagrin by labour ; his industry is an amusement to me : I sometimes pass complete hours in looking at him, as he bores, and turns pieces of oak as hard as ivory.

Now and then I stop in the middle of the city before the shop of a smith ; and then I am transformed into the Lacedemonian *Liches*, at Tegeum, attending to the processes of forging and hammering iron. The moment that the man perceives me attentive to his work, I will soon acquire his confidence. I am not, as *Liches* was, looking for the tomb of *Orestes* ;* but I have occasion to employ the art of a smith, if not for myself, for the benefit of some one else. I order this honest fellow to manufacture for me some solid articles of household furniture, which I intend to bestow as a monument to preserve my memory in some poor family. I wish besides to purchase the friendship of an artificer ; I am perfectly sure that the attention which he sees I pay to his work, will induce him to exert his utmost skill in executing it. I thus hit two marks with one stone. A rich man, in similar circumstances, would give alms and confer no obligation on any one.

* See *Herodotus*, book i.

J. J. Rousseau told me a little anecdote of himself, relative to the subject in hand. "One day," said he, "I happened to be at a village festival, in a gentleman's country seat not far from Paris. After dinner the company betook themselves to walking up and down the fair, and amused themselves with throwing pieces of small money among the peasantry to have the pleasure of seeing them scramble and fight in picking them up. For my own part, following the bent of my solitary humour, I walked apart in another direction. I observed a little girl selling apples, displayed on a flat basket, which she carried before her. To no purpose did she extol the excellence of her goods; no customer appeared to cheapen them. How much do you ask for all your apples, said I to her?—All my apples? replied she, and at the same time began to reckon with herself.—Threepence, Sir, said she.—I take them at that price, returned I, on condition you will go and distribute them among those little Savoyards whom you see there below: this was instantly executed. The children were quite transported with delight at this unexpected regale, as was likewise the little merchant at bringing her wares to so good a market. I should have conferred much less pleasure on them had I given them the money. Every one was satisfied and no one humbled." The great art of doing good consists in doing it judiciously. Religion instructs us in this important secret, in recommending to us to do to others what we wish should be done to us.

I sometimes betake myself to the great road, like the ancient Patriarchs, to do the honours of the City to strangers who may happen to arrive. I recollect the time when I myself was a stranger in strange lands, and the kind reception which I met with when far from home. I have frequently heard the nobility of Poland and Germany complain of our grandees. They allege that French travellers of distinction are treated in these countries with unbounded hospitality and attention; but that they, on visiting France in their turn, are almost entirely neglected. They are invited to one dinner on their arrival, and to another when preparing to depart: and this is the whole amount of our hospitality. For my own part, incapable of acquitting the obligations of this kind which I lie under to the Great of foreign countries, I repay them to their commonalty.

I perceive a German travelling on foot; I accost him, I invite him to stop and take a little repose at my habitation. A good supper and a glass of good wine dispose him to communicate to me the occasion of his journey. He is an officer; he has served in Prussia and in Russia; he has been witness to the partition of Poland. I interrupt him to make my enquiries after Mareschal Count *Munich*, the Generals *de Villebois* and *du Bosquet*, the Count *de Munchio*, my friend *M. de Taubenheim*, Prince *Xatorinski*, Field Mareschal of the Polish Confederation, whose prisoner I once was. Most of them are dead, he tells me; the rest are superannuated, and retired from all public employment. Oh! how melancholy it is, I exclaim, to travel from one's country, and to make acquaintance with estimable men abroad whom we are never to see more! Oh! how rapid a career is human life! Happy the man who has it in his power to employ it in doing good! My guest favours me with a short detail of his adventures: to those I pay the closest attention, from their resemblance to my own. His leading object was to deserve well of his fellow creatures, and he has been rewarded by them with calumny and persecution. He is under misfortunes; he has come to France to put himself under the Queen's protection: he hopes a great deal from her goodness. I confirm his hopes, by the idea which public opinion has conveyed to me of the character of that Princess, and by that which Nature has impressed on her physiognomy. I am pouring the balm of consolation, he tells me, into his heart. Full of emotion, he presses my hand. My cordial reception of him is a happy presage of the rest; he could have met with nothing so friendly even in his own country. Oh! what pungent sorrow may be soothed to rest by a single word, and by the feeblest mark of benevolence!

I remember that one day I found, not far from the iron gate de Caillot, at the entrance into the Elysian Fields, a young woman sitting with a child in her lap, on the brink of a ditch. She was handsome, if that epithet may be applied to a female overwhelmed in melancholy. I walked into the sequestered alley where she had taken her station; the moment that she perceived me she looked the other way: her timidity and modesty fixed my eyes on her. I remarked that she was very decently dressed, and wore very white linen; but her gown and neck hand-

kerchief were so completely darned over, that you would have said the spiders had spun the threads. I approached her with the respect which is due to the miserable ; I bowed to her, and she returned my salute with an air of gentility, but with reserve. I then endeavoured to engage her in conversation by talking of the wind and the weather : her replies consisted of monosyllables only. At length I ventured to ask if she had come abroad for the pleasure of enjoying a walk in the country : upon this she began to sob and weep without uttering a single word. I sat down by her, and insisted, with all possible circumspection, that she would disclose to me the cause of her distress. She said to me : " Sir, my husband has just been involved in a " bankruptcy at Paris, to the amount of five thousand livres, " (208l. 6s. 8d.) ; I have been giving him a convoy as far as " Neuilly : he is gone, on foot, a journey of sixty leagues hence, " to try to recover a little money which is due to us. I have " given him my rings and all my other little trinkets, to defray " the expense of his journey ; and all that I have left in the " world, to support myself and my child, is a single shilling " piece."—" What parish do you belong to, Madam ?" said I. —" St. Eustache," replied she.—" The rector," I subjoined, " passes for a very charitable, good man."—" Yes, Sir," said she, " but you need not to be informed, that there is no charity " in parishes for us miserable Jews." At these words, her tears began to flow more copiously, and she arose to go on her way. I tendered her a small pittance toward her present relief which I besought her to accept at least as a mark of my good-will. She received it, and returned me more reverences and thanks, and loaded me with more benedictions, than if I had re-established her husband's credit. How many delicious banquets might that man enjoy, who would this way lay out three or four hundred pounds a year !

My different establishments, scattered over the Capital and the vicinity, variegated my life most innocently and most agreeably. In Winter, I take up my residence in that which is exposed completely to the noon-day Sun ; in Summer, I remove to that which has a northern aspect, and hangs over the cooling stream. At another time, I pitch my tent in the neighbourhood of the Rue d'Artois, among piles of hewn stone, where I see palaces rising around me, pediments decorated with sphynxes

domes, kiosques. I take care never to enquire to whom they belong. Ignorance is the mother of pleasure and of admiration. I am in Egypt, at Babylon, in China. To-day I sup under an acacia, and am in America: to-morrow I shall dine in the midst of a kitchen-garden, under an arbour shaded with lilach; and I shall be in France.

But, I shall be asked, Is there nothing to be feared in such a style of living! May I meet the final period of my days while engaged in the practice of virtue! I have heard many a history of persons who perished in hunting matches, in parties of pleasure, while travelling by land and by water; but never in performing acts of beneficence. Gold is a powerful commander of respect with the commonalty. I display wealth sufficient to secure their attention, but not enough to tempt any one to plunder me. Besides the police of Paris is in excellent order. I am very circumspect in the choice of my hosts; and if I perceive that I have been mistaken in my selection, the rent of my lodging is paid beforehand, and I return no more.

On this plan of life I have not the least occasion for the encumbrances of furniture and servants. With what tender solicitude am I expected in each of my habitations! What satisfaction does my arrival inspire! What attention and zeal do my entertainers express to outrun my wishes! I enjoy among them the choicest blessings of Society, without feeling any of the inconveniences. No one sits down at my table to backbite his neighbour, and no one leaves it with a disposition to speak unkindly of me. I have no children; but those of my landlady are more eager to please me than their own parents. I have no wife: the most sublime charm of love is to devise and accomplish the felicity of another. I assist in the formation of happy marriages, or in promoting the happiness of those which are already formed. I thus dissipate my personal languor, I put my passions upon the right scent, by proposing to them the noblest attainments at which they can aim upon the earth. I have drawn nigh to the miserable with an intention to comfort them, and from them perhaps I shall derive consolation in my turn.

In this manner it is in your power to live, O ye great ones of the earth! and thus might you multiply your fleeting days in the land through which you are merely travellers. Thus it is that you may learn to know men; and form no longer, with

your own Nation, a foreign race, a race of conquerors, living on the spoils of the country which you have subdued. Thus it is that, issuing from your palaces, encircled with a crowd of happy vassals, who are loading you with benedictions, you might present the image of the ancient Patricians, a name so dear to the Roman people. You are every day looking out for some new spectacle ; there is no one which possesses so much the charm of novelty as the happiness of mankind. You wish for objects that are interesting : there is no one more interesting than the sight of the families of the poor peasantry, diffusing fruitfulness over your vast and solitary domains, or superannuated soldiers, who have deserved well of their country, seeking refuge under the shadow of your wings. Your compatriots are surely much better than tragedy heroes, and more interesting than the shepherds of the comic opera.

The indigence of the commonalty is the first cause of the physical and moral maladies of the rich. It is the business of administration to provide a remedy. As to the maladies of the soul resulting from indigence, I could wish some palliatives at least might be found. For this purpose, I would wish to have formed, at Paris, some establishment similar to those which humane Physicians and sage Lawyers have there instituted for remedying the ills of body and of fortune ; I mean dispensaries of consolation, to which an unfortunate wretch, secure of secrecy, nay of remaining unknown, might resort to disclose the cause of his distress. We have, I grant, confessors and preachers, for whom the sublime function of comforting the miserable seems to be reserved. But confessors are not always of the same disposition with their penitents, especially when the penitent is poor and not much known to them. Nay there are many confessors who have neither the talents nor the experience requisite to the comforter of the afflicted. The point is not to pronounce absolution to the man who confesses his sins, but to assist him in bearing up under those of another, which lie much heavier upon him.

As to preachers, their sermons are usually too vague, and too injudiciously applied to the various necessities of their hearers. It would be of much more importance to the Public, if they would announce the subject of their intended discourses, rather than display the titles of their ecclesiastical dignities. They

will declaim against avarice to a prodigal, or against profusion to a miser. They will expatiate on the dangers of ambition to a young man in love; and on those of love to an ancient female devotee. They will inculcate the duty of giving alms on the persons who receive them; and the virtue of humility on a poor water-porter. There are some who preach repentance to the unfortunate, who promise the joys of paradise to voluptuous courts, and who denounce the flames of hell against starving villages. I have known, in the country, a poor female peasant driven to madness by a sermon of this cast. She believed herself to be in a state of damnation, and lay along speechless and motionless. We have no sermons calculated to cure languor, sorrow, scrupulousness of conscience, melancholy, chagrin, and so many other distempers which prey upon the soul. Besides, how many circumstances change, to every particular auditor, the nature of the pain which he endures, and render totally useless to him all the parade of a trim harangue. It is no easy matter to find out, in a soul wounded and oppressed with timidity, the precise point of it's grief, and to apply the balm and the hand of the good Samaritan to the sore. This is an art known only to minds endowed with sensibility, who have themselves suffered severely, and which is not always the attainment of those who are virtuous only.

The people feel the want of this consolation; and finding no man to whom they can make application for it, they address themselves to stones. I have sometimes read with an aching heart, in our churches, billets affixed by the wretched to the corner of a pillar, in some obscure chapel. They represented the cases of unhappy women abused by their husbands; of young people labouring under embarrassment: they solicited not the money of the compassionate, but their prayers. They were upon the point of sinking into despair. Their miseries were inconceivable. Ah! if men who have themselves been acquainted with grief, of all conditions, would unite in presenting to the sons and daughters of affliction their experience and their sensibility, more than one illustrious sufferer would come and draw from them those consolations, which all the preachers, and books, and philosophy in the World, are incapable to administer. All that the poor man needs in many cases, in order to soothe his wo, is a person into whose ear he can pour out his complaint.

A Society composed of men such as I have fondly imagined to myself, would undertake the important task of eradicating the vices and the prejudices of the populace. They would endeavour, for example, to apply a remedy to the barbarity which imposes such oppressive loads on the miserable horses, and which cruelly abuses them in other respects, while every street of the city rings with the horrible oaths of their drivers. They would likewise employ their influence with the rich, to take pity in their turn upon the human race. You see, in the midst of excessive heats, the hewers of stone exposed to the meridian Sun, and to the burning reverberation of the white substance on which they labour. Hence these poor people are frequently seized with ardent fevers, and with disorders in the eyes which issue in blindness. At other times they have to encounter the long rains and pinching cold of Winter, which bring on rheums and consumptions. Would it be a very costly precaution for a master-builder, possessed of humanity, to rear in his work-yard a moveable shed of matting or straw, supported by poles, to serve as a shelter to his labourers? By means of a fabric so simple they might be spared various maladies of body and of mind; for most of them, as I have observed, are in this respect actuated by a false point of honour; and have not the courage to employ a screen against the burning heat of the Sun, or against rainy weather, for fear of incurring the ridicule of their companions.

The people might farther be inspired with a relish for morality, without the use of much expensive cookery. Nay every appearance of disguise renders truth suspected by them. I have many a time seen plain mechanics shed tears at reading some of our good romances, or at the representation of a tragedy. They afterwards demanded if the story which had thus affected them was really true; and on being informed that it was imaginary, they valued it no longer; they were vexed to think that they had thrown away their tears. The rich must have fiction in order to render morality palatable, and morality is unable to render fiction palatable to the poor; because the poor man still expects his felicity from truth, and the rich hope for theirs only from illusion.

The rich however stand in no less need than the populace of moral affections. These are, as we have seen, the moving springs of all the human passions. To no purpose do they pretend to

refer the plan of their felicity to physical objects; they soon lose all taste for their castles, their pictures, their parks, when instead of sentiment they possess merely the sensations of them. This is so indubitably true, that if, under the pressure of their languor, a stranger happens to arrive to admire their luxury, all their powers of enjoyment are renovated. They seem to have consecrated their life to an indefinite voluptuousness; but present to them a single ray of glory, in the very bosom of death itself, and they are immediately on the wing to overtake it. Offer them regiments, and they post away after immortality. It is the moral principle therefore which must be purified and directed in Man. It is not in vain then that Religion prescribes to us the practice of virtue, which is the moral sentiment by way of excellence, seeing it is the road to happiness both in this World and that which is to come.

The society of which I have been suggesting the idea, would farther extend it's attentions into the retreats of virtue itself. I have remarked that about the age of forty-five, a striking revolution takes place in most men, and, to acknowledge the truth, that it is then they degenerate, and become destitute of principle. At this period it is that women transform themselves into men, according to the expression of a celebrated Writer, in other words, that they become completely depraved. This fatal revolution is a consequence of the vices of our education, and of the manners of Society. Both of these present the prospect of human happiness only toward the middle period of life, in the possession of fortune and of honours. When we have painfully scrambled up this steep mountain, and reached it's summit, about the middle of our course, we re-descend with our eyes turned back toward youth, because we have no perspective before us but death. Thus the career of life is divided into two parts, the one consisting of hopes, the other of recollections; and we have laid hold of nothing by the way but illusions.

The first, at least, support us by feeding desire; but the others overwhelm us by inspiring regret only. This is the reason that old men are less susceptible of virtue than young people though they talk much more about it, and that they are much more melancholy among us than among savage Nations. Had they been directed by Religion and Nature, they must

have rejoiced in the approaching of their latter end, as vessels just ready to enter the harbour. How much more wretched are those who, having devoted their youth to virtue, seduced by that treacherous commerce with the world, look backward, and regret the pleasures of youth which they knew not how to prize ! The empty glare which encompasses the wicked dazzles their eyes ; they feel their faith staggering, and they are ready to exclaim with *Brutus* :—" O Virtue ! thou art but an empty name." Where shall we find books and preachers capable of restoring confidence to them in tempests which have shaken even the Saints ? They transfix the soul with secret wounds, and torment it with gnawing ulcers, which shrink from discovery. They are beyond all possibility of relief, except from a society of virtuous men who have been themselves tried through all the combinations of human wo, and who, in default of the ineffectual arguments of reason, may bring them back to the sentiment of virtue, at least by that of their friendship.

There is in China, if I am not mistaken, an establishment similar to that which I am proposing. At least certain Travelers, and among others *Ferdinand Mendez Pinto*, make mention of a house of Mercy, which takes up and pleads the cause of the poor and the oppressed, and which, in an infinite number of instances, goes forth to meet the calls of the miserable, much farther than our charitable Ladies do. The emperor has bestowed the most distinguished privileges on it's members ; and the Courts of Justice pay the utmost deference to their requests. Such a society employed in acting well, would merit among us at least prerogatives as high as those whose attention is restricted to speaking well ; and by drawing forward into view the virtues of our own obscure citizens, would deserve at the least as highly of their Country, as those who do nothing but retail the sentences of the sages, or what is not less common, the brilliant crimes of Antiquity.

Scrupulous care ought to be taken not to give to such an association the form of an academy or Fraternity. Thanks to our mode of education, and to our manners, every thing that is reduced to form among us, corps, congregation, sect, party, is generally ambitious and intolerant. If the men which compose them draw nigh to a light which they themselves have not kind-

led, it is to extinguish it ; if they touch upon the virtue of another, it is to blight it. Not that the greatest part of the members of those bodies are destitute of excellent qualities individually ; but their incorporation is good for nothing, for this reason simply, that it presents to them centres different from the common centre of Country. What is it that has rendered a word so dear to humanity, theatrical and vain ? What sense is now-a-days affixed to the term charity, the Greek name of which, signifies attraction, grace, loveliness ? Can any thing be more humiliating than our parochial charities, and than the humanity of our Philosophers ?

I leave this project to be unfolded and matured by some good man, who loves GOD and his fellow-creatures, and who performs good actions in the way that Religion prescribes, without letting his left hand know what his right hand doth. Is it then a matter of so much difficulty to do good ? Let us pursue the opposite scent to that which is followed by the ambitious and the malignant. They employ spies to furnish them with all the scandalous anecdotes of the day ; let us employ ours in discovering, and bringing to light, good works performed in secret. They advance to meet men in elevated situations, to range themselves under their standards, or to level them with the ground ; let us go forth in quest of virtuous men in obscurity, that we may make them our models. They are furnished with trumpets to proclaim their own actions, and to decry those of others ; let us conceal our own, and be the heralds of other men's goodness. There is such a thing as refinement in vice ; let us carry virtue to perfection.

I am sensible that I may be apt to ramble a little too far. But should I have been so happy as to suggest a single good idea to one more enlightened than myself ; should I have contributed to prevent, some day in time to come, one poor wretch in despair from going to drown himself, or in a fit of rage from knocking out his enemy's brains, or in the lethargy of languor from going to squander his money and his health away among loose women ; I shall not have scribbled over a piece of paper in vain.

Paris presents many a retreat to the miserable, known by the name of hospitals. May Heaven reward the charity of those

who have founded them, and the still greater virtue of those persons of both sexes who superintend them ! But first, without adopting the exaggerated ideas of the populace, who are under the persuasion that these houses possess immense revenues, it is certain, that a person well known, and an adept in the science of public finance, having undertaken to furnish the plan of a receptacle for the sick, found on calculation that the expense of each of them would not exceed eight-pence half-penny a day : that they might be much better provided on these terms, and at an easier rate, than in the hospitals. For my own part, I am clearly of opinion that these same pence, distributed day by day in the house of a poor sick man, would produce a still farther saving, by contributing to the support of his wife and children. A sick person of the commonalty has hardly need of any thing more than good broths ; his family might partly subsist on the meat of which they were made.

But hospitals are subject to many other inconveniences. Maladies of a particular character are there generated, frequently more dangerous than those which the sick carry in with them. They are sufficiently known, such especially as are denominated hospital-fevers. Besides these, evils of a much more serious nature, those which affect morals, are there communicated. A person of extensive knowledge and experience has assured me, that most of the criminals who terminate their days on a gibbet, or in the galleys, are the spawn of hospitals. This amounts to what has been already asserted, that a corps of whatever description is always depraved, especially a corps of beggars. I could wish therefore, that so far from collecting and crowding together the miserable, they might be provided for, under the inspection of their own relations, or entrusted to poor families who would take care of them.

Public prisons are necessary ; but it is surely desirable that the unhappy creatures there immured should be less miserable while under confinement. Justice undoubtedly in depriving them of liberty proposes not only to punish, but to reform their moral character. Excess of misery and evil communications can change it only from bad to worse. Experience farther demonstrates, that there it is the wicked acquire the perfection of depravity. One who went in only feeble and culpable, comes out an accomplished villain. As this subject has been treated pre-

foundly by a celebrated Writer, I shall pursue it no farther. I shall only beg leave to observe, that there is no way but one to reform men, and that is to render them happier. How many who were living a life of criminality in Europe, have recovered their character in the West-India Islands to which they were transported ! They are become honest men there, because they have there found more liberty and more happiness than they enjoyed in their native country.

There is another class of Mankind still more worthy of compassion, because they are innocent : I mean persons deprived of the use of reason. They are shut up, and they seldom fail of consequence to become more insane than they were before. I shall on this occasion remark, that I do not believe there is through the whole extent of Asia, China however excepted, a single place of confinement for persons of this description. The Turks treat them with singular respect ; whether it be that *Mahomet* himself was occasionally subject to mental derangement, or whether from a religious opinion they entertain, that as soon as a madman sets his foot into a house the blessing of God enters it with him. They delay not a moment to set food before him and caress him in the tenderest manner. There is not an instance known of their having injured any one. Our madmen on the contrary are mischievous, because they are miserable. As soon as one appears in the streets, the children, themselves already rendered miserable by their education, and delighted to find a human being on whom they can vent their malignity with safety, pelt him with stones, and take pleasure in working him up into a rage. I must farther observe that there are no madmen among savages ; and I could not wish for a better proof that their political constitution renders them more happy than polished Nations are, as mental derangement proceeds only from excessive chagrin.

The number of insane persons under confinement is with us enormously great. There is not a provincial town, of any considerable magnitude, but what contains an edifice destined to this use. Their treatment in these is surely an object of commiseration, and loudly calls for the attention of Government, considering that if after all they are no longer citizens, they are still men, and innocent men too. When I was pursuing my studies at Caen, I recollect having seen in the madmens' ward,

some shut up in dungeons, where they had not seen the light for fifteen years. I one evening accompanied into some of those dismal caverns the good Curé de St. Martin, whose boarder I then was, and who had been called to perform the last duties of his office to one of those poor wretches, on the point of breathing his last. He was obliged, as well as I, to stop his nose all the time he was by the dying man ; but the vapour which exhaled from his dunghill was so infectious, that my clothes retained the smell for more than two months, nay my very linen, after having been repeatedly sent to the washing. I could quote traits of the mode of treatment of those miserable objects which would excite horror. I shall relate only one which is still fresh in my memory.

Some years ago, happening to pass through l'Aigle, a small town in Normandy, I strolled out about sunset to enjoy a little fresh air. I perceived on a rising ground a convent most delightfully situated. A monk, who stood porter, invited me in to see the house. He conducted me through an immense court, in which the first thing that struck my eye was a man of about forty years old, with half a hat on his head, who advanced directly upon me, saying, " Be so good as stab me to the heart ; be so good as stab me to the heart." The monk who was my guide, said to me, " Sir, don't be alarmed ; he is a poor captain who lost his reason on account of an unmilitary preference that passed upon him in his regiment."

" This house then," said I to him, " serves as a receptacle for lunatics:" " Yes," replied he, " I am Superior of it." He walked me from court to court, and conducted me into a small enclosure in which were several little cells of mason work, and where we heard persons talking with a good deal of earnestness. There we found a canon in his shirt, with his shoulders quite exposed, conversing with a man of a fine figure who was seated by a small table in front of one of those little cells. The monk went up to the poor canon, and with his full strength applied a blow of his fist to the wretch's naked shoulder, ordering him at the same time to turn out. His comrade instantly took up the monk, and emphatically said to him: " Man of blood, you are guilty of a very cruel action. Do not you see this poor creature has lost his reason?" The monk, struck dumb for the moment, bit his lips, and threatened him with his eyes. But

the other without being disconcerted, said to him: "I know I am your victim; you may do with me whatever you please." Then, addressing himself to me, he shewed me his two wrists galled to the quick by the iron manacles with which he had been confined.

"You see, Sir," said he to me, "in what manner I am treated!" I turned to the monk with an expression of indignation at a conduct so barbarous. He coolly replied: "Oh! I can put an end to all his fine reasoning in a moment." I addressed however a few words of consolation to the unfortunate man, who, looking at me with an air of confidence, said, "I think, Sir, I have seen you at St. Hubert, at the house of M. the Mareschal *de Broglio*." "You must be mistaken, Sir," replied I, "I never had the honour of being at the Mareschal *de Broglio*'s." Upon that he instituted a process of recollection respecting the different places where he thought he had seen me, with circumstances so accurately detailed, and clothed with such appearances of probability, that the monk nettled at his well-merited reproaches, and at the good sense which he displayed, thought proper to interrupt his conversation, by introducing a discourse about marriage, the purchase of horses, and so on. The moment that the chord of his insanity was touched his head was gone. On going out the monk told me that this poor lunatic was a man of very considerable birth. Some time after I had the pleasure of being informed, that he had found means to escape from his prison, and had recovered the use of his reason.

A great many physical remedies are employed for the cure of madness; and it frequently proceeds from a moral cause, for it is produced by chagrin. Might there not be a possibility to employ, for the restoration of reason to those disordered beings, means directly opposed to those which occasioned the loss of reason; I mean mirth, pleasure, and above all the pleasures of music? We see, from the instance of *Saul*, and many others of a similar nature, what influence music possesses for re-establishing the harmony of the soul. With this ought to be united treatment the most gentle, and care to place the unhappy patients, when visited with paroxysms of rage, not under the restraint of fetters, but in an apartment matted round, where they could do no mischief either to themselves or others. I am persuaded that by employing such humane precautions, numbers

might be restored, especially if they were under the charge of persons who had no interest in perpetuating their derangement; as is but too frequently the case, with respect to families who are enjoying their estates, and houses of restraint where a good board is paid for their detention. It would likewise be proper, in my opinion, to commit the care of men disordered in their understanding to females, and that of females to men, on account of the mutual sympathy of the two sexes with each other.

I would not wish that there should be in the kingdom any one art, craft or profession, but whose final retreat and recompense should be at Paris. Among the different classes of citizens who practise these, and of whom the greater part is little known in the capital, there is one, and that very numerous, which is not known at all there, though one of the most miserable, and that to which of all others the rich are under the strongest obligations, I mean the seamen. These hardy and unpolished beings are the men who go in quest of fuel to their voluptuousness to the very extremities of Asia, and who are continually exposing their lives upon our own coasts, in order to find a supply of delicacies for their tables. Their conversation is at least as sprightly as that of our peasantry, and incomparably more interesting, from their manner of viewing objects, and from the singularity of the countries which they have visited in the course of their voyages. At the recital of their many-formed disasters, and of the tempests which threatened them, while employed in conveying to you objects of enjoyment from every region of the Globe, ye happy ones of the earth! your own repose may be rendered more precious to you. By contrasts such as these your felicity will be heightened.

I know not whether it was for the purpose of procuring for himself a pleasure of this nature, or to give an enlivening sea air to the park of Versailles, that *Louis XIV.* planted a colony of Venetian gondoliers on the great canal which fronts the palace. Their descendants subsist there to this day. This establishment, under a better direction, might have furnished a very desirable and useful retreat to our own seamen. But that great King, frequently misled by evil counsellors, almost always carried the sentiment of his own glory beyond his own people. What a contrast would these hardy sons of the waves, bedaubed with pitch, their wind and weather-beaten faces resembling sea-

calves, arrived from Greenland, others from the coast of Guinea, have presented, with the marble statues, and verdant bowers of the park of Versailles! *Louis XIV.* would oftener than once have derived from those blunt honest fellows, more useful information, and more important truth, than either books, or even his marine officers of the highest rank could have given him; and on the other hand, the novelty of their characteristic singularity, and that of their reflections on his own greatness, would have provided for him spectacles much more highly amusing than those which the wits of his Court devised for him, and at an enormous expense. Besides, what emulation would not the prospect of such preferments have kindled among our sailors?

I ascribe the perfection of the English Marine, in part at least, simply to the influence of their Capital, and from it's being incessantly under the eye of the Court. Were Paris a sea-port as London is, how many ingenious inventions, thrown away upon modes and operas, would be applied to the improvement of navigation! Were sailors seen there even as currently as soldiers, a passion for the marine service would be more extensively diffused. The condition of seamen, become more interesting to the Nation and to it's rulers, would be gradually meliorated; and at the same time this would have a happy tendency to mitigate the brutal despotism of those who frequently maintain their authority over them, merely by dint of swearing and blows. It is a good, and an easily practicable piece of policy, to enfeeble vice by bringing men nearer to each other, and by rendering them more happy. Our country gentlemen did not give over beating their hinds, till they saw that this useful part of Mankind had become interesting objects in books, and on the theatre.

Not that I wish for our seamen an establishment similar to that of the *Hotel des Invalides*. I am charmed with the architecture of that monument, but I pity the condition of it's inhabitants. Most of them are dissatisfied, and always murmuring, as any one may be convinced who will take the trouble to converse with them: I do not believe there is any foundation for this; but experience demonstrates that men formed into a corps sooner or later degenerate, and are always unhappy. It would be wiser to follow the Laws of Nature, and to associate them by families. I could wish that the practice of the English were

observed and copied, by settling our superannuated seamen on the ferries of rivers, on board all those little barges which traverse Paris, and by scattering them along the Seine, like tritons, to adorn the plains: we should see them stemming the tides of our rivers in wherries under smack-sails, luffing as they go; and there they would introduce methods of Navigation more prompt, and more commodious, than those hitherto known and practised.

As to those whom age or wounds may have totally disabled for service, they might be suitably accommodated and provided for, in an edifice similar to that which the English have reared at Greenwich for the reception of their decayed seamen. But to acknowledge the truth, the State, I am persuaded, would find it a much more economical plan to allow them pensions, and that these very seamen would be much better disposed of in the bosom of their several families. This however need not prevent the raising at Paris a majestic and commodious monument, to serve as a retreat for those brave veterans. The capital sets little value upon them because it knows them not; but there are some among them who, by going over to the enemy, are capable of conducting a descent on our Colonies, and even upon our own coasts. Desertion is as common among our mariners as among our soldiers, and their desertion is a much greater loss to the State, because it requires more time to form them, and because their local knowledge is of much higher importance to an enemy than that of our cavaliers, or of our foot-soldiers.

What I have now taken the liberty to suggest on the subject of our seamen, might be extended to all the other estates of the kingdom without exception. I could wish that there were not a single one but what had it's centre at Paris, and which might not find there a place of refuge, a retreat, a little chapel. All these monuments of the different classes of citizens, which communicate life to the body politic, decorated with the attributes peculiar to each particular craft and profession, would there figure with perfect propriety, and with most powerful effect.

After having rendered the Capital a resort of happiness and of improvement to our own Nation, I would allure to it the men of foreign nations from every corner of the Globe. O! ye Women, who regulate our destiny, how much ought you to

contribute towards uniting mankind, in a City where your empire is unbounded ! In ministring to your pleasures do men employ themselves over the face of the whole Earth. While you are engrossed wholly in enjoyment, the Laplander issues forth in the midst of storm and tempest to pierce with his harpoon the enormous whale, whose beard is to serve for stuffing to your robes : a man of China puts into the oven the porcelain out of which you sip your coffee, while an Arabian of Moka is busied in gathering the berry for you : a young woman of Bengal on the banks of the Ganges is spinning your muslin, while a Russian, amidst the forests of Finland, is felling the tree which is to be converted into a mast for the vessel that is to bring it home to you.

The glory of a great Capital is to assemble within it's walls the men of all Nations who contribute to it's pleasures. I should like to see at Paris, the Samoiedes with their coats of sea-calf-skin and their boots of sturgeon's hide ; and the black Iolofs dressed in their waist-attire, streaked with red and blue. I could wish to see there the beardless Indians of Peru dressed in feathers from head to foot, strolling about undismayed in our public squares, around the statues of our Kings, mingled with stately Spaniards in whiskers and short cloaks. It would give me pleasure to see the Dutch making a settlement on the thirsty ridges of Montmartre ; and following the bent of their hydraulic inclination like the beavers, find the means of there constructing canals filled with water ; while the inhabitants of the banks of the Oroonoko should live comfortably dry, suspended over the lands inundated by the Seine, amidst the foliage of willows and alder-trees.

I could wish that Paris were as large, and of a population as much diversified, as those ancient cities of Asia, such as Nineveh and Suza, whose extent was so vast that it required three days to make the tour of them, and in which *Ahasuerus* beheld two hundred Nations bending before his throne. I could wish that every people on the face of the Earth kept up a correspondence with that city, as the members with the heart in the human body. What secret did the Asiatics possess to raise cities so vast and so populous ? They are in all respects our elder brothers. They permitted all Nations to settle among them.

Present men with liberty and happiness and you will attract them from the ends of the Earth.

It would be much to the honour of his humanity if some great Prince would propose this question to the discussion of Europe : Whether the happiness of a people did not depend upon that of it's neighbours? The affirmative clearly demonstrated, would level with the dust the contrary maxim, that of *Machiavel*, which has too long governed our European politics. It would be very easy to prove, in the first place, that a good understanding with her neighbours would enable her confidently to disband those land and naval forces which are so burdensome to a Nation. It might be demonstrated, secondly, that every people has been a partaker in the blessings and the calamities of their neighbours, from the example of the Spaniards, who made the discovery of America, and have scattered the advantages and the evils of it over all the rest of Europe. This truth may be farther confirmed from the prosperity and greatness attained by those Nations who were at pains to conciliate the good-will of their neighbours, as the Romans did, who extended farther and farther the privileges of citizenship, and thereby in process of time consolidated all the Nations of Italy into one single State. They would undoubtedly have formed but one single People of the whole Human Race, had not their barbarous custom of exacting the service of foreign slaves counteracted a policy so humane. It might finally be made apparent, how miserable those Governments were which, however well constituted internally, lived in a state of perpetual anxiety, always weak and divided, because they did not extend humanity beyond the bounds of their own territory. Such were the ancient Greeks: such is in modern times Persia, which has sunk into a state of extreme weakness, and into which it fell immediately after the brilliant reign of *Scha Abbas*, whose political maxim it was to surround himself with deserts ; his own country has at length become one like those of his neighbours. Other examples to the same purpose might be found among the powers of Asia, who receive the Law from handfuls of Europeans.

Henry IV. had formed the celestial project of engaging all Europe to live in peace ; but his project was not sufficiently extensive to support itself : war must have fallen upon Europe from the other quarters of the World. Our particular destinies

are connected with those of mankind. This is an homage which the Christian Religion justly challenges, and which it alone merits. Nature says to you, love thyself alone ; domestic education says, love your family ; the national, love your country ; but Religion says, Love all Mankind without exception. She is better acquainted with our interests than our natural instinct is, or our parentage, or our politics. Human societies are not detached from each other like those of animals. The bees of France are not in the least affected by the destruction of the hives in America. But the tears of Mankind, shed in the New World, cause streams of blood to flow in the ancient Continent ; and the war-whoop of a savage on the bank of a lake has oftener than once re-echoed through Europe, and disturbed the repose of her Potentates. The Religion which condemns love of ourselves, and which enjoins the love of Mankind, is not self-contradictory as certain sophists have alleged ; she exacts the sacrifice of our passions only to direct them toward the general felicity ; and by inculcating upon us the obligation of loving all men, she furnishes us with the only real means of loving ourselves.

I could wish therefore that our political relations with all the Nations of the World, might be directed toward a gracious reception of their subjects in the Capital of the kingdom. Were we to expend only a part of what we lay out on foreign communications, we should be no great losers. The Nations of Asia send no Consuls nor Ministers, nor Ambassadors, out of the Country, unless in very extraordinary cases : and all the Nations of the Earth seek to them. It is not by sending Ambassadors in great state, and at a vast expense, to neighbouring Nations, that we conciliate or secure their friendship. In many cases our ostentatious magnificence becomes a secret source of hatred and jealousy among their grandees. The point is to give a kind reception to their subjects properly so called, the weak, the persecuted, the miserable. Our French refugees were the men who conveyed part of our skill, and of our power, to Prussia, and to Holland. How many unseen relations of commerce, and of national benevolence, have been formed upon the foundation of such graciousness of reception ! An honest German who retires into Austria, after having made a little fortune in France, is the means of sending to us a hundred of his compa-

tricts, and disposes the whole canton in which he settles to wish us well. By bonds like these national friendships are contracted, much better than by diplomatic treaties; for the opinion of a Nation always determines that of the Prince.

After having rendered the city of men wonderfully happy, I would direct my attention to the embellishment and commodiousness of the city of stones. I would rear in it a multitude of useful monuments; I would extend along the houses, arcades as in Turin, and a raised pavement as in London, for the accommodation of foot-passengers; in the streets where it was practicable, trees and canals as in Holland, for the facility of carriage; in the suburbs, caravanseries as in the cities of the East, for the entertainment, at a moderate expense, of travellers from foreign lands; toward the centre of the city, markets of vast extent, and surrounded with houses six or seven stories high, for the reception of the poorer sort, who will soon be at a loss for a place where to lay their head. I would introduce a great deal of variety into their plans and decorations. In the circular surrounding space I would dispose temples, halls of justice, public fountains; the principal streets should terminate in them. These markets, shaded with trees, and divided into great compartments, should display in the most beautiful order all the gifts of *Flora*, of *Ceres*, and of *Pomona*. I would erect in the centre the statue of a good King; for it is impossible to place it in a situation more honourable to his memory, than in the midst of the abundance enjoyed by his subjects.

I know of no one thing which conveys to me an idea more precise of the police of a city, and of the felicity of it's inhabitants, than the sight of it's markets. At Petersburg every market is parcelled out into sub-divisions destined to the sale of a single species of merchandise. This arrangement pleases at first glance, but soon fatigues the eye by it's uniformity. *Peter* the First was fond of regular forms, because they are favourable to despotism. For my own part, I should like to see the most perfect harmony prevailing among our merchants, and the most complete contrasts among their wares. By removing the rivalities which arise out of commerce in the same sort of goods, those jealousies which are productive of so many quarrels would be prevented. It would give me pleasure to behold Abundance

there pouring out the treasure of all her horns pellmell; pheasants, fresh-cod, heath-cocks, turbot, pot-herbs, piles of oysters, oranges, wild-ducks, flowers, and so on. Permission should be granted to expose to sale there every species of goods whatever; and this privilege alone would be sufficient to destroy various species of monopoly.

I would erect in the city but few temples; these few however should be august, immense, with galleries on the outside and within, and capable of containing on festival days the third part of the population of Paris. The more that temples are multiplied in a State the more is Religion enfeebled. This has the appearance of a paradox; but look at Greece and Italy covered with church-towers, while Constantinople is crowded with Greek and Italian renegades. Independently of the political, and even religious causes which produce these national depravations, there is one which is founded in Nature, the effects of which we have already recognised in the weakness of the human mind. It is this, That affection diminishes in proportion as it is divided among a variety of objects. The Jews, so astonishingly attached to their religion, had but one single temple, the recollection of which excites their regret to this day.

I would have amphitheatres constructed at Paris like those at Rome, for the purpose of assembling the People, and of treating them from time to time with days of festivity. What a superb site for such an edifice is presented in the rising ground at the entrance into the Elysian Fields! How easy would it have been to hollow it down to the level of the plain in form of an amphitheatre, disposed into ascending rows of seats covered with green turf simply, having its ridge crowned with great trees, exalted on an elevation of more than fourscore feet: What a magnificent spectacle would it have been to behold an immense people ranged round and round, like one great family, eating, drinking, and rejoicing in the contemplation of their own felicity!

All these edifices should be constructed of stone; not in petty-layers, according to our mode of building, but in huge blocks such as the Ancients employed,* and as becomes a city that is

* And such as Savages employ. Travellers are astonished when they survey in Peru the monuments of the ancient Incas, formed of vast irregular stones perfectly fitted to each other. Their construction presents at first sight two great difficulties: How could the Indians have transported those

to last for ever. The streets and the public squares should be planted with great trees of various sorts. Trees are the real monuments of Nations. Time, which speedily impairs the Works of Man, only increases the beauty of those of Nature. It is to the trees that our favourite walk the Boulevards is indebted for it's principal charm. They delight the eye by their verdure; they elevate the soul to Heaven by the loftiness of their stems; they communicate respect to the monuments which they shade by the majesty of their forms. They contribute,

huge masses of stone; and How did they contrive to adapt them so exactly to each other, notwithstanding their irregularity? Our men of Science have first supposed a machinery proper for the transportation of them; as if there could be any machine more powerful than the arms of a whole people exerting themselves in concert. They next tell us, that the Indians gave them those irregular forms by dint of labour and industry. This is a downright insult to the common sense of Mankind. Was it not much easier to cut them into a regular than into an irregular shape? I myself was embarrassed in attempting a solution of this problem. At length having read in the Memoirs of Don Ullou, and likewise in some other travellers, that there are found in many places of Peru beds of stone along the surface of the ground, separated by clefts and crevices, I presently comprehended the address of the ancient Peruvians. All they had to do was to remove, piece and piece, those horizontal layers of the quarries, and to place them in a perpendicular direction, by moving the detached pieces close to each other. Thus they had a wall ready made which cost them nothing in the hewing. The natural genius is possessed of resources exceedingly simple, but far superior to those of our arts. For example, the Savages of Canada had no cooking pots of metal previous to the arrival of the Europeans. They had however found means to supply this want, by hollowing the trunk of a tree with fire. But how did they contrive to set it a boiling, so as to dress a whole ox, which they frequently did? I have applied to more than one pretended man of genius for a solution of this difficulty, but to no purpose. As to myself, I was long puzzled, I acknowledge, in devising a method by which water might be made to boil in kettles made of wood, which were frequently large enough to contain several hundred gallons. Nothing however could be easier to Savages: they heated pebbles and flints till they were red-hot, and cast them into the water in the pot, till it boiled. Consult *Champlain*.*

* This may be true. But the savages of Canada did not boil all their food "in kettles made of wood." Long before the arrival of the Europeans among them, they discovered much ingenuity in forming kettles of earth which they baked in the fire. In neatness, in durability, &c., they were not inferior to the common earthen ware of the Europeans, and their descendants in America. I have seen many of these Indian kettles. Those of the Creeks, and some other southern tribes, were much larger, and formed with more taste.—B. S. B.

more than we are aware of, to rivet our attachment to the places which we have inhabited. Our memory fixes on them as on points of union which have secret harmonies with the soul of Man. They possess a commanding influence over the events of our life, like those which rise by the shore of the Sea, and which frequently serve as a direction to the pilot.

I never see the linden tree but I feel myself transported into Holland ; nor the fir without representing to my imagination the forests of Russia. Trees frequently attach us to Country when the other ties which united us to it are torn asunder. I have known more than one exile who in old-age was brought back to his native village, by the recollection of the elm under the shade of which he had danced when a boy. I have heard more than one inhabitant of the Isle of France sighing after his Country under the shade of the banana, and who said to me ; “ I should be perfectly tranquil where I am could I but see a “ violet.” The trees of our natal soil have a farther and most powerful attraction, when they are blended, as was the case among the Ancients, with some religious idea, or with the recollection of some distinguished personage. Whole Nations have attached their patriotism to this object. With what veneration did the Greeks contemplate at Athens the olive-tree which *Minerva* had there caused to spring up, and on Mount Olympus, the wild-olive with which *Hercules* had been crowned ! *Plutarch* relates, that, when at Rome the fig-tree under which *Romulus* and *Remus* had been suckled by a wolf, discovered signs of decay from a lack of moisture, the first person who perceived it exclaimed, Water ! Water ! and all the people in consternation flew with pots and pails full of water to refresh it. For my part, I am persuaded, that though we have already far degenerated from Nature, we could not without emotion behold the cherry tree of the forest, into which our good King *Henry IV.* clambered up, when he perceived the army of the Duke of *Mayenne* filing off to the bottom of the adjoining valley.

A city, were it built completely of marble, would have to me a melancholy appearance, unless I saw in it trees and verdure :*

* Trees are from their duration the real monuments of Nations ; and they are further their calendar, from the different seasons at which they send forth their leaves, their flowers, and their fruits. Savages have no other, and our own peasantry make frequent use of it. I met one day, toward the

on the other hand a landscape, were it Arcadia, were it along the banks of the Alpheus, or did it present the swelling ridges of Mount Lyceum, would appear to me a wilderness, if I did not see in it at least one little cottage. The works of Nature and those of Man mutually embellish each other. The spirit of selfishness has destroyed among us a taste for Nature. Our peasantry see no beauty in our plains but there where they see the return of their labour. I one day met in the vicinity of the Abbey de la Trappe, on the flinty road of Notre Dame d'Apres, a country woman walking along with two large loaves of bread under her arm. It was in the month of May; and the weather inexpressibly fine. "What a charming season it is!" said I to the good woman: "How beautiful are those apple trees in blossom! How sweetly these nightingales sing in the woods!"—"Ah!" replied she, "I don't mind nosegays, nor these little squallers! It is bread that we want." Indigence hardens the heart of the country people, and shuts their eyes. But the good folks of the town have no greater relish for Nature, because the love of gold regulates all their other appetites. If some of them set a value on the liberal arts, it is not because those arts imitate natural objects; it is from the price to which the hand of great masters raises their productions. That man gives a thousand crowns for a picture of the country painted by *Lorrain*,

end of Autumn, a country girl all in tears, looking about for a handkerchief which she had lost upon the great road. "Was your handkerchief very pretty?" said I to her. "Sir," replied she, "it was quite new; I bought 'it last bean-time.'" It has long been my opinion, that if our historical epochs, so loudly trumpeted, were dated by those of Nature, nothing more would be wanting to mark their injustice, and expose them to ridicule. Were we to read, for example, in our books of History, that a Prince had caused part of his subjects to be massacred, to render Heaven propitious to him, precisely at the season when his kingdom was clothed with the plenty of harvest; or were we to read the relations of bloody engagements, and of the bombardment of cities, dated with the flowering of the violet, the first cream-cheese making, the sheep-making season; Would any other contrast be necessary to render the perusal of such histories detestable? On the other hand, such dates would communicate immortal graces to the actions of good Princes, and would confound the blessings which they bestowed, with those of Heaven.*

* For a specimen of an Indian calendar, formed upon such circumstances as are alluded to by our author, I here leave to refer the reader to my *Elements of Botany*, Part i, page 297, &c.—B. S. B.

who would not take the trouble to put his head out of the window to look at the real landscape : and there is another who ostentatiously exhibits the bust of *Socrates* in his study, who would not receive that Philosopher into his house were he in life, and who perhaps would not scruple to concur in adjudging him to death, were he under prosecution.

The taste of our Artists has been corrupted by that of our trades-people. As they know that it is not Nature but their own skill which is prized, their great aim is to display themselves. Hence it is that they introduce a profusion of rich accessories into most of our monuments, while they frequently omit altogether the principal object. They produce, for instance, as an embellishment for gardens, vases of marble, into which it is impossible to put any vegetable ; for apartments, urns and pitchers into which you cannot pour any species of fluid ; for our cities, colonades without palaces, gates in places where are no walls, public squares fenced with barriers, to prevent the people from assembling in them. It is they tell us that the grass may be permitted to shoot. A fine project truly ! One of the heaviest curses which the Ancients pronounced against their enemies was, that they might see the grass grow in their public places. If they wish to see verdure in ours, Why do they not plant trees in them, which would give the people at once shade and shelter ? There are some who introduce into the trophies which ornament the town residences of our grandees, bows, arrows, catapults ; and who have carried the simplicity of the thing to such a height as to plant on them Roman standards, inscribed with these characters, S. P. Q. R. This may be seen in the Palais de Bourbon. Posterity will be taught to believe that the Romans were, in the eighteenth century, masters of our country. And in what estimation do we mean, vain as we are, that our memory should be held by them, if our monuments, our medals, our trophies, our dramas, our inscriptions, continually hold out to them strangers and antiquity ?

The Greeks and Romans were much more consistent. Never did they dream of constructing useless monuments. Their beautiful vases of alabaster and calcedony were employed in festivals, for holding wine or perfumes ; their peristyles always announced a palace ; their public places were destined only to the purpose of assembling the people. There they reared the statues of their

great men, without enclosing them in rails of iron, in order that their images might still be within reach of the miserable, and be open to their invocation after death, as they themselves had been while they were alive. *Juvenal* speaks of a statue of bronze at Rome, the hands of which had been worn away by the kisses of the People. What glory to the memory of the person whom it represented! Did it still exist, that mutilation would render it more precious than the *Venus de Medicis*, with its fine proportions.

Our populace we are told is destitute of patriotism. I can easily believe it, for every thing is done that can be done to destroy this principle in them. For example, on the pediment of the beautiful church which we are building in honour of Saint *Genevieve*, but which is too small, as all our modern monuments are, an adoration of the cross is represented. You see indeed the Patroness of Paris in bas-reliefs under the peristyle, in the midst of Cardinals; but would it not have been more in character to exhibit to the People their humble Patroness in her habit of shepherdess, in a little jacket and cornet, with her scrip, her crook, her dog, her sheep, her moulds for making cheese, and all the peculiarities of her age and of her condition, on the pediment of the church dedicated to her memory? To these might have been added a view of Paris, such as it was in her time. From the whole would have resulted contrasts and objects of comparison of the most agreeable kind. The People at sight of this rural scenery would have called to memory the days of old. They would have conceived esteem for the obscure virtues which are necessary to their happiness, and would have been stimulated to tread in the rough paths of glory which their lowly patroness trod before them, whom it is now impossible for them to distinguish in her Grecian robes, and surrounded by Prelates.

Our Artists in some cases deviate so completely from the principal object, that they leave it out altogether. There was exhibited some years ago, in one of the workshops of the Louvre, a monument in honour of the Dauphin and Dauphiness, designed for the cathedral of the city of Sens. Every body flocked to see it, and came away in raptures of admiration. I went with the rest; and the first thing I looked for was the resemblance of the Dauphin and Dauphiness, to whose memory the monu-

ment had been erected. There was no such thing there, not even in medallions. You saw *Time* with his scythe, *Hymen* with urns, and all the thread bare ideas of allegory, which frequently is by the way the genius of those who have none. In order to complete the elucidation of the subject, there were on the panels of a species of altar, placed in the midst of this group of symbolical figures, long inscriptions in Latin, abundantly foreign to the memory of the great Prince who was the object of them. There, said I to myself, there is a fine national monument! Latin inscriptions for French readers, and pagan symbols for a cathedral! Had the Artist, whose chisel I in other respects admired, meant to display his own talents, he ought to have recommended to his successor, to leave imperfect a small part of the base of that monument, which death prevented himself from finishing, and to engrave these words upon it: *Coustou moriens faciebat*.* This consonance of fortune would have united him to the royal monument, and would have given a deep impression to the reflections on the vanity of human things, which the sight of a tomb inspires.

Very few Artists catch the moral object; they aim only at the picturesque. "Oh, what a fine subject for a *Belisarius*!" exclaim they, when the conversation happens to turn on one of our great men reduced to distress. Nevertheless, the liberal arts are destined only to revive the memory of Virtue, and not Virtue to give employment to the fine Arts. I acknowledge that the celebrity which they procure is a powerful incentive to prompt men to great actions, though after all it is not the true one; but though it may not inspire the sentiment, it sometimes produces the acts. Now-a-days we go much farther. It is no longer the glory of virtue which associations and individuals endeavor to merit; it is the honour of distributing it to others at which they aim. Heaven knows the strange confusion which results from this! Women of very suspicious virtue, and kept-mistresses, establish Rose-feasts: they dispense premiums on virginity! Opera-girls crown our victorious Generals! The *Mareschal de Saxe*, our Historians tells us, was crowned with laurels on the national theatre: as if the Nation had consisted of players, and as if it's Senate were a theatre! For my own part I look on Virtue

* The work of *Coustou* left unfinished by death.

as so respectable, that nothing more would be wanting, but a single subject in which it was eminently conspicuous, to overwhelm with ridicule those who dared to dispense to it such vain and contemptible honours. What stage dancing girl, for example, durst have had the impudence to crown the august forehead of *Turenne* or that of *Fenelon* !

The French Academy would be much more successful, if it aimed at fixing, by the charms of eloquence, the attention of the Nation on our great men : did it attempt less, in the elogiums which it pronounces to panegyryze the dead, than to satyryze the living. Besides, posterity will rely as little on the language of praise as on that of censure. For, first, the term elogium is suspected of flattery ; and farther, this species of eloquence characterises nothing. In order to plant virtue, it is necessary to bring forward defects and vices, that conflict and triumph may be rendered conspicuous. The style employed in it is full of pomp and luxuriance. It is crowded with reflections, and paintings, foreign very frequently to the principal object. It resembles a Spanish horse ; it prances about wonderfully, but never gets forward. This kind of eloquence, vague and indecisive as it is, suits no one great man in particular, because it may be applied in general to all those who have run the same career. If you only change a few proper names in the elogium of a General, you may comprehend in it all Generals past and future. Besides it's bombast tone is so little adapted to the simple language of truth and virtue, that when a Writer means to introduce characteristical traits of his hero, that we may know at least of whom he is speaking, he is under the necessity of throwing them into notes, for fear of deranging his academical order.

Assuredly had *Plutarch* written the elogium only of illustrious men, he would have had as few readers at this day as the Panegyric of *Trajan* has, which cost the younger *Pliny* so many years labour. You will never find an academical elogium in the hands of one of the common People. You might see them perhaps turning over those of *Fontenelle*, and a few others, if the persons celebrated in them had paid attention to the people while they live. But the Nation takes pleasuse in reading History.

As I was walking some time ago toward the quarter of the Military School, I perceived at some distance, near a sand-pit.

a thick column of smoke. I bent my course that way to see what produced it. I found in a very solitary place, a good deal resembling that which *Shakespeare* makes the scene where the three witches appear to *Macbeth*, a poor and aged woman sitting upon a stone. She was deeply engaged in reading in an old book, close by a great pile of herbage which she had set on fire. I first asked her for what purpose she was burning those herbs? She replied that it was for the sake of the ashes, which she gathered up and sold to the laundresses; that for this end she bought of the gardeners the refuse plants of their grounds, and was waiting till they were entirely consumed that she might carry off the ashes, because they were liable to be stolen in her absence. After having thus satisfied my curiosity, she returned to her book, and read on with deep attention. Eagerly desirous to know what book it was with which she filled up her hours of languor, I took the liberty to ask the title of it. "It is the life of M. *de Turenne*," she replied. "Well, what do you think of him?" said I. "Ah!" replied she with emotion, "he was a brave man, who suffered much uneasiness from a Minister of State, while he was alive!" I withdrew, filled with increased veneration for the memory of M. *de Turenne*, who served to console a poor old woman in distress. It is thus that the virtues of the lower classes of society support themselves on those of great men, as the feeble plants, which to escape being trampled under foot, cling to the trunk of the oak.

OF NOBILITY.

The ancient Nations of Europe imagined that the most powerful stimulus to the practice of virtue was to ennoble the descendants of their virtuous citizens. They involved themselves by this in very great inconveniencies. For in rendering nobility hereditary, they precluded to the rest of the citizens the paths which lead to distinction. As it is the perpetual, exclusive possession of a certain number of families, it ceases to be a national recompense, otherwise a whole Nation would consist of Nobles at length; which would produce a lethargy fatal to arts and handicrafts; and this is actually the case in Spain, and in part of Italy.

Many other mischiefs necessarily result from hereditary noblesse, the principal of which is the formation, in a State, of

two several Nations which come at last to have nothing in common between them; patriotism is annihilated, and both the one and the other hastens to a state of subjection. Such has been, within our recollection, the fate of Hungary, of Bohemia, of Poland, and even of part of the provinces of our own kingdom, such as Brittany, where a nobility insufferably lofty, and multiplied beyond all bounds, formed a class absolutely distinct from the rest of the citizens. It is well worthy of being remarked, that these counties, though republican, though so powerful, in the opinion of our political Writers, from the freedom of their constitution, have been very easily subjected by despotic Princes, who were the masters they tell us of slaves only. The reason is, that the People in every country prefer one Sovereign to a thousand tyrants, and that their fate always decides the fate of their lordly oppressors. The Romans softened the unjust and odious distinctions which existed between Patricians and Plebeians, by granting to these last privileges and employments of the highest respectability.

Means in my opinion still more effectual were employed by that People to bring the two classes of citizens to a state of closer approximation; particularly the practice of adoption. How many great men started up out of the mass of the People, to merit this kind of recompense, as illustrious as those which Country bestows, and still more addressed to the heart! Thus did the *Catos* and the *Scipios* distinguish themselves, in hope of being ingrafted into Patrician families. Thus it was that the Plebeian *Agricola* obtained in marriage the daughter of *Augustus*. I do not know, but perhaps I am only betraying my own ignorance, that adoption ever was in use among us, unless it were between certain great Lords, who from the failure of heirs of blood were at a loss how to dispose of their vast possessions when they died. I consider adoption as much preferable to nobility conferred by the State. It might be the means of reviving illustrious families, the descendants of which are now languishing in the most abject poverty. It would endear the Nobility to the People, and the People to the Nobility. It would be proper that the privilege of bestowing the rights of adoption should be rendered a species of recompense to the Noblesse themselves. Thus, for example, a poor man of family, who had distinguished himself, might be empowered to

adopt one of the commonalty, who should acquire eminence. A man of birth would be on the look-out for virtue among the People; and a virtuous man of the commonalty would go in quest of a worthy nobleman as a patron. Such political bonds of union appear to me more powerful, and more honourable, than mercenary matrimonial alliances, which, by uniting two individual citizens of different classes, frequently alienate their families. Nobility thus acquired would appear to me far preferable to that which public employments confer; for these, being entirely the purchase of so much money, from that very circumstance loose their respectability, and consequently degrade the nobility attached to them.

But in taking it at the best, one disadvantage must ever adhere to hereditary nobility, namely, the eventual excessive multiplication of persons of that description. A remedy for this has been attempted among us, by adjudging nobility to various professions, such as maritime commerce. First of all, it may be made a question, Whether the spirit of commerce can be perfectly consistent with the honour of a gentleman? Besides, What commerce shall he carry on who has got nothing! Must not a premium be paid to the merchant for admitting a young man into his counting-house to learn the first principles of trade? And where should so many poor men of noble birth find the means, who have not wherewithal to clothe their children? I have seen some of them, in Brittany, the descendants of the most ancient families of the province, so reduced as to earn a livelihood by mowing down the hay of the peasantry for so much a day.

Would to God that all conditions were nobilitated, the profession of agriculture in particular! for it is that, above all others, of which every function is allied to virtue. In order to be a husbandman there is no need to deceive, to flatter, to degrade one's-self, to do violence to another. He is not indebted for the profits of his labour to the vices or the luxury of his age, but to the bounty of Heaven. He adheres to his Country, at least by the little corner of it which he cultivates. If the condition of the husbandman were ennobled, a multitude of benefits to the inhabitants of the kingdom would result from it. Nay, it would be sufficient if it were not considered as ignoble. But here is a resource which the State might employ for the relief of the de-

cayed nobility. Most of the ancient seignories are purchased now a-days by persons who possess no other merit but that of having money ; so that the honour of those illustrious houses have fallen to the share of men who, to confess the truth, are hardly worthy of them. The King ought to purchase those lordships as often as they come to market ; reserve to himself the seignorial rights, with part of the lands, and form of those small domains civil and military benefices, to be bestowed as rewards on good officers, useful citizens, and noble and poor families, nearly as the Timariots are in Turkey.

OF AN ELYSIUM.

The hereditary transmission of Nobility is subject to a farther inconveniency ; namely this, Here is a man, who sets out with the virtues of a *Marius*, and finishes the career, loaded with all his vices. I am going to propose a mode of distinguishing superior worth which shall not be liable to the dangers of inheritance, and of human inconstancy : it is to withhold the rewards of virtue till after death.

Death affixes the last seal to the memory of Man. It is well known of what weight the decisions were which the Egyptians pronounced upon their citizens after life was terminated. Then too it was that the Romans sometimes exalted theirs to the rank of demi-gods, and sometimes threw them into the Tiber. The People, in default of priests and magistrates, still exercise among us a part of this priesthood. I have oftener than once stood still of an evening, at sight of a magnificent funeral procession, not so much to admire the pomp of it, as to listen to the judgment pronounced by the populace on the high and puissant Prince whose obsequies were celebrating. I have frequently heard the question asked, Was he a good master ? Was he fond of his wife and children ? Was he a friend to the Poor ? The People insist particularly on this last question ; because, being continually influenced by the principal call of Nature, they distinguish in the rich hardly any other virtue than beneficence. I have often heard this reply given : “ Oh ! he never did good “ to any one : he was an unkind relation, and a harsh master.” I have heard them say, at the interment of a Farmer-General who left behind him more than twelve millions of livres, (half a million sterling) : “ He drove away the country poor from the

“ gate of his castle with fork and flail.” On such occasions, you hear the spectators fall a swearing and cursing the memory of the deceased. Such are usually the funeral orations of the rich, in the mouth of the populace. There is little doubt that their decisions would produce consequences of a certain kind, were the police of Paris less strict than it is.

Death alone can ensure reputation, and nothing short of religion can consecrate it. Our grandees are abundantly aware of this. Hence the sumptuousness of their monuments in our churches. It is not that the clergy make a point of their being interred there, as many imagine. The clergy would equally receive their perquisites were the interment in the country: they would take care, and very justly, to be well paid for such journeys; and they would be relieved from breathing all the year round in their stalls, the putrid exhalations of rotting carcases. The principal obstacle to this necessary reform in our police proceeds from the great and the rich, who, seldom disposed to crowd the church in their life time, are eager for admission after their death, that the people may admire their superb *mausolea*, and their virtues portrayed in brass and marble. But thanks to the allegorical representations of our Artists, and to the Latin inscriptions of our *Literati*, the People know nothing about the matter; and the only reflection which they make at sight of them is, that all this must have cost an enormous sum of money; and that such a vast quantity of copper might be converted to advantage into porridge-pots.

Religion alone has the power of consecrating, in a manner that shall last, the memory of Virtue. The King of Prussia, who was so well acquainted with the great moving spring of politics, did not overlook this. As the Protestant Religion, which is the general profession of his kingdom, excludes from the churches the images of the Saints, he supplied their place with the portraits of the most distinguished officers who had fallen in his service. The first time I looked into the churches at Berlin, I was not a little astonished to see the walls adorned with the portraits of officers in their uniform. Beneath, there was an inscription indicating their names, their age, the place of their birth, and the battle in which they had been killed. There is likewise subjoined, if my recollection is accurate, a

line or two of eulogium. The military enthusiasm kindled by this sight is inconceivable.*

Among us, there is not a monkish order so mean as not to exhibit in their cloisters, and in their churches, the pictures of their great men, beyond all contradiction more respected, and better known, than those of the State. These subjects, always accompanied with picturesque and interesting circumstances, are the most powerful means which they employ for attracting novices. The Carthusians already perceive, that the number of their novices is diminished, now that they have no longer in their cloisters the melancholy history of *S. Bruno* painted in a style so masterly, by *Le Sueur*. No one order of citizens prizes the portraits of men who have been useful only to the Nation, and to Mankind; print-sellers alone sometimes display the images of them filed on a string, and illuminated with blue and red. Thither the People resort to look for them among those of players and opera-girls. We shall soon have it is said the exhibition of a museum at the Tuilleries; but that royal monument is consecrated rather to talents than to patriotism, and like so many others it will undoubtedly be locked up from the People.

First of all, I would have it made a rule that no citizen whatever should be interred in the church. *Xenophon* relates that *Cyrus*, the sovereign Lord of the greatest part of Asia, gave orders at his death, that his body should be buried in the open country, under the trees, to the end that, said this great Prince, the elements of it might be quickly united to those of Nature, and contribute a-new to the formation of her beautiful Works. This sentiment was worthy of the sublime soul of *Cyrus*. But tombs in every country, especially the tombs of great Kings, are the most endeared of all monuments to the Nations. The Savages consider those of their ancestors as titles to the possession of the lands which they inhabit. "This country is ours," say they, "the bones of our fathers are here laid to rest." When

* But what, at length, has all this enthusiasm availed? If it served, for a time, to uphold the glory of the second Frederick, it has not been sufficient to prevent the almost entire declension of the honours of the Prussian crown

they are forced to quit it, they dig them up with tears, and carry them off with every token of respect.*

The Turks erect their tombs by the side of the high-ways, as the Romans did. The Chinese make theirs enchanted spots. They place them in the vicinity of their cities, in grottos dug out of the side of hills; they decorate the entrance into them with pieces of architecture, and plant before them, and all around, groves of cypress, and of firs, intermingled with trees which bear flowers and fruits. These spots inspire a profound and a delicious melancholy; not only from the natural effect of their decoration, but from the moral sentiment excited in us by tombs, which are, as we have said in another place, monuments erected on the confines of two Worlds.

* Nothing can exceed the enthusiastic attachment of the greater number of the known savage nations of North-America to the simple tombs of their fathers, or ancestors. They visit them, when this can be done, at stated periods; or if transiently passing in the neighbourhood of them, they stop to honour the *tumulus* with a stone. Sometimes, when a tribe, or family, is at a great distance from the burial-place of the nation, it is not uncommon to see individuals, even the old and infirm, carrying about with them, the bones of their relatives, until they shall have an opportunity of depositing them in the sacred ground of the nation. Nay, they are at the labour of frequently anointing the bones thus carried, with the view, as they imagine, of preventing their too early decay.—When the Indians visit the sepulchral tumuli, and add, according to the custom of their tribe, a stone, they often utter these words, “Grandfather, I cover you!”—I have been the more induced to mention these circumstances, by reason of an assertion of the late very respectable Dr. James Beattie, in his *Remarks on some Passages of the sixth Book of the Æneid*. The assertion to which I allude, occurs in the following passage: “To inculcate this doctrine, that the soul would suffer for some time in another world, if the body were not decently buried in this, and that the neglect of the funeral ceremonies is offensive to superior beings, was a very warrantable fraud in the lawgivers of Greece and Egypt; as it would no doubt make the people attentive to a duty, *whereof we find that savage nations are too apt to be forgetful*.” †

Now nothing can be more unfounded than this assertion. So far is it from the truth, that our accounts of savage nations (those of the Americans, perhaps, more especially) are full of instances of the veneration of the people for the remains of their dead. On this subject, a very interesting volume might be written: and, indeed, I am not sure, that already something of the kind has not proceeded from the pen of a German writer.—B. S. B.

† *Transactions of the Royal Society of Edinburgh.* Vol. ii

Our great ones then would lose nothing of the respect which they wish to attach to their memory, were they to be interred in public receptacles of the dead, adjoining to the Capital. A magnificent sepulchral chapel might be constructed in the midst of the burying-ground, devoted solely to funeral obsequies, the celebration of which frequently disturbs the worship of God in parish-churches. Artists might give full scope to their imagination in the decorations of such a mausoleum ; and the temples of humility and truth would no longer be profaned by the vanity and falsehood of monumental epitaphs.

While each citizen should be left at liberty to lodge himself, agreeably to his own fancy, in this last and lasting abode, I would have a large space selected, not far from Paris, to be consecrated by every solemnity of Religion, to be a general receptacle of the ashes of such as may have deserved well of their country.

The services which may be rendered to our country are infinite in number, and very various in their Nature. We hardly acknowledge any but what are of one and the same kind, derived from formidable qualities, such as valour. We revere that only which terrifies us. The tokens of our esteem are frequently testimonies of our weakness. We are brought up to sense of fear only, and not of gratitude. There is no modern Nation so insignificant as not to have it's *Alexander* and it's *Cesar* to commemorate, but no one it's *Bacchus* and it's *Ceres*. The Ancients, as valiant at least as we are, thought incomparably better. *Plutarch* observes somewhere, that *Ceres* and *Bacchus*, who were mortals, attained the supreme rank of Gods, on account of the pure, universal, and lasting blessings which they had procured for Mankind ; but that *Hercules*, *Theseus*, and other Heroes, were raised only to the subordinate rank of demi-gods, because the services which they rendered to men were transient, circumscribed, and contained a greater mixture of evil.

I have often felt astonishment at our indifference about the memory of those of our Ancestors who introduced useful trees into the country, the fruits and shade of which are to this day so delicious. The names of those benefactors are most of them entirely unknown ; their benefits are however perpetuated to us from age to age. The Romans did not act in this manner. *Pliny* tells us, with no small degree of self-complacency, that of the eight species of cherry known at Rome in his time, one was

called the *Plinian*, after the name of one of his relations, to whom Italy was indebted for it. The other species of this very fruit bore, at Rome, the names of the most illustrious families, being denominated the Apronian, the Actian, the Cæcilian, the Julian. He informs us that it was *Lucullus* who, after the defeat of *Mithridates*, transplanted from the kingdom of Pontus the first cherry-trees into Italy, from whence they were propagated in less than a hundred and twenty years all over Europe, England not excepted, which was then peopled with barbarians. They were perhaps the first means of the civilization of that Island, for the first laws always spring up out of agriculture: and for this very reason it is that the Greeks gave to *Ceres* the name of *Legislatrix*.

Pliny, in another place, congratulates *Pompey* and *Vespasian* on having displayed at Rome the ebony-tree, and that of the balm of Judea, in the midst of their triumphal processions, as if they had then triumphed not only over the Nations, but over the very Nature of their countries. Assuredly, if I entertained a wish to have my name perpetuated, I would much rather have it affixed to a fruit in France than to an island in America. The People in the season of that fruit would recal my memory with tokens of respect. My name, preserved in the baskets of the peasantry, would endure longer than if it were engraved on columns of marble. I know of no monument in the noble family of *Montmorenci* more durable, and more endeared to the People, than the cherry which bears it's name. The Good-Henry, otherwise *lapathum*, which grows without culture in the midst of our plains, will confer a more lasting duration on the memory of *Henry IV.* than the statue of bronze placed on the Pont-Neuf, though protected by an iron rail and a guard of soldiers. If the seeds and the heifers which *Louis XV.* by a natural movement of humanity, sent to the Island of Otaheité, should happen to multiply there, they will preserve his memory much longer, and render it much dearer among the Nations of the South-Sea, than the pitiful pyramid of bricks which the fawning Academicians attempted to rear in honour of him at Quito, and perhaps than the statues erected to him in the heart of his own kingdom.

The benefit of a useful plant is, in my opinion, one of the most important services which a citizen can render to his Country. Foreign plants unite us to the Nations from whence they

come ; they convey to us a portion of their happiness ; and of their genial Suns. The olive-tree represents to me the happy climate of Greece much better than the book of *Pausanias* ; and I find the gifts of *Minerva* more powerfully expressed in it than upon medallions. Under a great-chesnut in blossom I feel myself laid to rest amidst the rich umbrage of America ; the perfume of a citron transports me to Arabia ; and I am an inhabitant of voluptuous Peru whenever I inhale the emanations of the heliotrope.

I would begin then with erecting the first monuments of the public gratitude to those who have introduced among us the useful plants ; for this purpose I would select one of the islands of the Seine, in the vicinity of Paris, to be converted into an Elysium. I would take for example that one which is below the majestic bridge of Neuilly, and which in a few years more will actually be joined to the suburbs of Paris. I would extend my field of operation, by taking in that branch of the Seine which is not adapted to the purposes of navigation, and a large portion of the adjoining Continent. I would plant this extensive district with the trees, the shrubbery, and the herbage, with which France has been enriched for several ages past. There should be assembled the great Indian-chesnut, the tulip-tree, the mulberry, the acacia of America and of Asia ; the pines of Virginia and Siberia ; the bear's-ear of the Alps ; the tulips of Calcedonia, and so on. The service-tree of Canada, with it's scarlet clusters, should have a place ; the *magnolia grandiflora* of America, which produces the largest and most odoriferous of flowers : the evergreen thuia of China, which puts forth no apparent flower, should interlace their boughs, and form here and there enchanted groves.

Under their shade, and amidst carpets of variegated verdure, should be reared the monuments of those who transplanted them into France. We should behold, around the magnificent tomb of *Nicot*, Ambassador from France to the Court of Portugal, which is at present in the church of St. Paul, the famous Tobacco plant springing up, called at first after his name *Nicotiana*, because he was the man who first diffused the knowledge of it over Europe. There is not a European Prince but what owes him a statue for that service, for there is not a vegetable in the World which has poured such sums into their treasuries,

and so many agreeable illusions into the minds of their subjects. The **nepenthes* of *Homer* is not once to be compared to it. There might be engraved on a tablet of marble adjoining to it, the name of the Flemish *Auger de Busbequius*, Ambassador from *Ferdinand* the First King of the Romans to the Porte, in other respects so estimable from the charms of his epistolary correspondence; and this small monument might be placed under the shade of the lilach, which he transported from Constantinople, and of which he made a present to Europe† in 1562. The lucern of *Media* should there surround with it's shoots the monument dedicated to the memory of the unknown husbandman, who first sowed it on our flinty hillocks, and who presented us with an article of pasture, in parched situations, which renovates itself at least four times a year. At sight of the *solanum* of *America* which produces at it's root the potatoe, the poorer part of the community would bless the name of the man who secured to them a species of aliment which is not liable, like corn, to suffer by the inconstancy of the elements, and by the granaries of monopolizers.‡ There too should be displayed, not without a lively interest, the urn of the unknown Traveller

* I am somewhat surprized, I confess, to find our good author speaking with so much enthusiasm, of the tobacco. Is he fond of snuff; does he smoke? As they regard a man of great genius and of still greater worth, I may be excused for asking these seemingly unimportant, questions.—I will not pretend to say, whether, upon the whole, the use of tobacco has done more harm than good, among mankind. It does not appear to be unfriendly to old age. It is, unquestionably, in some cases, a medicine of much efficacy. But tobacco, as an article of usefulness, ought not to be compared to the *nepenthes* of *Homer*: if, indeed, this last be what we call opium, or at least some other anodyne preparation of the poppy.—B. S. B.

† See *Matthiola* on *Dioscorides*.

‡ The potatoe (*solanum tuberosum*) is a native of *Peru* and *Chili*, and doubtless of other parts of *South America*. It is not, as has been supposed, by *Sir Joseph Banks* and other learned and ingenious men, a native of *Virginia*. I have fully satisfied myself, that it was not even known, in a cultivated state, to any of the *Americans* north of *Mexico*, when the *Europeans* first took possession of these countries. And we learn from *Clavigero* and other writers, that this invaluable vegetable was unknown in *Mexico*, until it was introduced into that country, from the more southern regions of *America*. We know not, with absolute certainty, who first introduced the potatoe into *Europe*: nor is the precise period of it's introduction satisfactorily ascertained.—B. S. B.

who adorned to endless generations the humble window of his obscure habitation with the brilliant colours of *Aurora*, by transplanting thither the nun of Peru.*

On advancing into this delicious spot, we should behold under domes and porticos the ashes and the busts of those who, by the invention of useful arts, have taught us to avail ourselves of the productions of Nature, and who by their genius have spared us the necessity of long and painful labours. There would be no occasion for epitaphs. The figures of the implements employed in weaving of stockings; of those used in twisting of silk, and in the construction of the windmill, would be monumental inscriptions as august, and as expressive, on the tombs of their inventors, as the sphere inscribed in the cylinder on that of *Archimedes*. There might one day be traced the aerostatic globe, on the tomb of *Mongolfier*; but it would be proper to know beforehand, whether that strange machine, which elevates men into the air by means of fire, or gas, shall contribute to the happiness of Mankind; for the name of the inventor of gun-powder himself, were we capable of tracing it, could not be admitted into the retreats of the benefactors of Humanity.

On approaching toward the centre of this Elysium we should meet with monuments still more venerable, of those who by their virtue have transmitted to posterity fruits far more delicious than those of the vegetables of Asia, and who have called into exercise the most sublime of all talents. There should be placed the monuments and the statues of the generous *Duquesne*, who himself fitted out a squadron, at his sole expense, in the defence of his Country: of the sage *Catinat*, equally tranquil in the mountains of Savoy, and in the humble retreat of St. Gratian; and of the heroic Chevalier *d'Assas*, sacrificing himself by night for the preservation of the French army in the woods of Klosterkam.

There should be the illustrious Writers, who inflamed their compatriots with the ardor of performing great actions. There

* For my own part, I would contemplate the monument of that man, were it but a simple tile, with more respect than the superb manseles which have been reared in many places of Europe, and of America, in honour of the inhuman conquerors of Mexico and Peru. More Historians than one have given their eulogium: but divine Providence has done them justice. They all died a violent death, and most of them by the hand of the executioner.

we should see *Amyot* leaning on the bust of *Plutarch*; and Thou, who hast given at once the theory and the example of virtue, divine author of *Telemachus*! we should revere thy ashes and thy image, in an image of those elysian fields which thy pencil has delineated in such glowing colours.

I would likewise give a place to the monuments of eminent women, for virtue knows no distinction of sex. There should be reared the statues of those who with all the charms of beauty preferred a laborious and obscure life, to the vain delights of the World; of matrons who re-established order in a deranged family, who, faithful to the memory of a husband frequently chargeable with infidelity, preserved inviolate the conjugal vow, even after death had cancelled the obligation, and devoted youth to the education of the dear pledges of an union now no more: and finally, the venerable effigies of those who attained the highest pinnacle of distinction by the very obscurity of their virtues. Thither should be transported the tomb of a Lady of Lamoignon, from the poor church of Saint Giles where it remains unnoticed: it's affecting epitaph would render it still more worthy of occupying this honourable station than the chisel of *Girardon*, whose master-piece it is: in it we read that a design had been entertained to bury her body in another place; but the poor of the parish, to whom she was a mother all her life long, carried it off by force, and deposited it in their church: they themselves would undoubtedly transport the remains of their benefactress, and resort to this hallowed spot to display them to the public veneration.

Hic manus ob Patriam pugnando vulnera passi;
 Quique Sacerdotes casti, dum vita manebat;
 Quique pii Vates, et *Phæbo* digna locuti;
 Inventas aut qui vitam excoluere per artes;
 Quique sui memores alios fecere merendo.*—*Æneid*, Book 10

* Thus imitated :

Here Patriot-bands who for their country bled :
 Priests, who a life of purest virtue led :
 Here Bards sublime, fraught with ethereal fire,
 Whose heavenly strains outvied *Apollo's* lyre :
 Divine Inventors of the useful Arts :
 All those whose generous and expansive hearts,
 By goodness sought to purchase honest fame ;
 And dying left behind a deathless name.

“ Here inhabit the heroic bands who bled in fighting the battles of their Country; the sacred ministers of religion, whose life exhibited unsullied purity; venerable bards, who uttered strains not unworthy of *Apollo* himself; and those who, by the invention of useful arts, contributed to the comfort of human life; all those, in a word, who by deserving well of Mankind have purchased for themselves a deathless name.”

Had *St. Pierre*, in the course of his travels, come over to this Island, and visited *Stowe*, he would have found his idea of an Elysium anticipated, and upon no mean scale, by the great Lord COBHAM, who has rendered every spot of that terrestrial Paradise sacred to the memory of departed excellence. What would have given our Author peculiar satisfaction, the Parish Church stands in the centre of the Garden; hence the People have unrestrained access to it; the monuments are for the most part patriotic, without regard to the distinctions of rank and fortune, except as allied to virtue; and the best inscriptions are in plain English, and humble prose. In a beautifully solemn valley, watered by a silent stream, and shaded by the trees of the Country, stands the Temple of the British Worthies. The decorations and the arrangements are simple; only that there is a mythological *Mercury* peeping over in the centre, to contemplate the immortal shades whom he has conducted to the Elysian Fields. Were I Marquis of BUCKINGHAM, the wing-heeled God, with his caduceus and Latin motto, should no longer disfigure the uniformity and simplicity of that enchanting scene; and if *Charon's* old crazy barge too were sunk to the bottom, the place and the idea would be greatly improved.

To those who have never been at *Stowe*, it may not be unacceptable to read the Names, and the characteristic Inscriptions of this lovely retreat, consecrated to Patriot worth, exalted genius, and the love of the Human Race.

SIR THOMAS GRESHAM,

Who, by the honourable profession of a Merchant, having enriched himself, and his Country, for carrying on the Commerce of the World, built the Royal Exchange.

IGNATIUS JONES,

Who, to adorn his Country, introduced and rivalled the Greek and Roman Architecture.

JOHN MILTON,

Whose sublime and unbounded genius equalled a subject that carried him beyond the limits of the World.

WILLIAM SHAKESPEAR,

Whose excellent genius opened to him the whole heart of Man, all the mines of fancy, all the stores of Nature; and gave him power, beyond all other Writers, to move, astonish, and delight Mankind.

JOHN LOCKE,

Who, best of all Philosophers, understood the powers of the Human Mind, the nature, end, and bounds of Civil Government; and, with equal courage

There I would have, scattered about, monuments of every kind, and apportioned to the various degrees of merit: obelisks, columns, pyramids, urns, bas-reliefs, medallions, statues, tablets, peristyles, domes; I would not have them crowded together as in a repository, but disposed with taste; neither would I have them all of white marble, as if they came out of the same quar-

and sagacity, refuted the slavish systems of usurped authority over the rights, the consciences, or the reason of Mankind.

SIR ISAAC NEWTON,

Whom the GOD of Nature made to comprehend his Works; and, from simple principles, to discover the Laws never known before, and to explain the appearances never understood, of this stupendous Universe.

SIR FRANCIS BACON, (LORD VERULAM)

Who, by the strength and light of a superior genius, rejecting vain speculation, and fallacious theory, taught to pursue truth, and improve Philosophy by the certain method of experiment.

KING ALFRED,

The mildest, justest, most beneficent of Kings; who drove out the Danes, secured the Seas, protected Learning, established Juries, crushed Corporation, guarded Liberty, and was the Founder of the English Constitution.

EDWARD, PRINCE OF WALES,

The terror of Europe, the delight of England; who preserved unaltered, in the height of Glory and Fortune, his natural Gentleness and Modesty.

QUEEN ELIZABETH,

Who confounded the projects and destroyed the Power that threatened to oppose the liberties of Europe; shook off the yoke of Ecclesiastical Tyranny; restored Religion from the Corruptions of Popery; and, by a wise, a moderate, and a popular Government, gave Wealth, Security, and Respect to England.

KING WILLIAM III.

Who by his Virtue and Constancy, having saved his country from a foreign Master, by a bold and generous enterprize, preserved the Liberty and Religion of Great Britain.

SIR WALTER RALEIGH,

A valiant Soldier, and an able Statesman; who, endeavouring to rouse the spirit of his Master, for the honour of his Country, against the ambition of Spain, fell a sacrifice to the influence of that Court, whose arms he had vanquished, and whose designs he opposed.

SIR FRANCIS DRAKE,

Who, through many perils, was the first of Britons that adventured to sail round the Globe; and carried into unknown Seas and Nations, the knowledge and glory of the English name.

JOHN HAMPDEN,

Who with great spirit, and consummate abilities, begun a noble opposition to an arbitrary Court, in defence of the Liberties of his Country: supported them in Parliament. and died for them in the Field.

ry; but of marbles and stones of every colour. There would be no occasion, through the whole extent of this vast enclosure, which I suppose to be at least a mile and a half in diameter, for the application of the line, nor for digging up the ground, nor for grass plots, nor for trees cut into shape and fantastically trimmed, nor of any thing resembling what is to be seen in our gardens. For a similar reason I would have no Latin inscriptions, nor mythological expressions, nor any thing that favoured of the Academy. Still less would I admit of dignities, or of honours, which call to remembrance the vain ideas of the World; I would retrench from them all the qualities which are destroyed by death; no importance should there be assigned but to good actions, which survive the man and the citizen, and which are the only titles that posterity cares for, and that GOD recompenses. The inscriptions upon them should be simple and naturally suggested by each particular subject. I would not set the living a-talking uselessly to the dead, and to inanimate objects, as is the case in our epitaphs; but the dead, and inanimate objects, should speak to the living for their instruction, as among the Ancients. These correspondencies of an invisible to a visible nature, of a time remote to the time present, convey to the soul the celestial extension of infinity, and are the source of the delight which ancient inscriptions inspire.

Thus, for example, on a rock placed amidst a tuft of strawberry-plants of Chili, these words might be inscribed:

I was unknown to Europe; but, in such a year, such a Person, born in such a Place, transplanted me from the lofty Mountains of Chili, and now I bear Flowers and Fruit in the happy climate of France.

Underneath a bas-relief of coloured marble, which should represent little children eating, drinking, and playing, the following inscription might appear.

We were exposed in the Streets to the Dogs, to Famine and Cold; such a compassionate Female, of such a place, lodged us, clothed us, and fed us with the milk which our own Mothers had denied.

At the foot of a statue of white marble, of a young and beautiful woman, sitting and wiping her eyes, with symptoms of grief and joy:

I was odious in the sight of GOD and Man; but, melted into Penitence, I have made my Peace with Heaven by Contrition, and have repaired the Mischief which I had done to Men, by befriending the Miserable.

Near this might be inscribed, under that of a young girl in mean attire, employed with her distaff and spindle, and looking up to Heaven with rapture :

I have learned to despise the vain Delights of the World, and now I enjoy
Happiness.

Of those monuments, some should exhibit no other elogium but the name simply : such should be, for example, the tomb which contained the ashes of the Author of *Telemachus* ; or at most I would engrave on it the following words, so expressive of his affectionate and sublime character :

He fulfilled the two Great Precepts of the Law : He loved GOD and Man.

I have no need to suggest, that these inscriptions might be conceived in a much happier style than mine ; but I would insist upon this, that in the figures introduced there should be displayed no air of insolence ; no dishevelled locks flying about in the wind, like those of the Angel sounding the resurrection-trumpet, no theatrical grief, and no violent tossing of the robes, like the Magdalene of the Carmelites ; no mythological attributes, which convey nothing instructive to the People. Every personage should there appear with his appropriate badge of distinction : there should be exhibited the sea-cap of the sailor, the cornet of the nun, the stool of the Savoyard, pots for milk, and pots for soup.

These statues of virtuous citizens ought to be fully as respectable as those of the Gods of Paganism, and unquestionably more interesting than that of the antique grinder or gladiator. But it would be necessary that our Artists should study to convey, as the Ancients did, the characters of the soul in the attitude of the body, and in the traits of the countenance, such as penitence, hope, joy, sensibility, innocence. These are the peculiarities of Nature, which never vary, and which always please, whatever be the drapery. Nay the more contemptible that the occupations and the garb of such personages are, the more sublime will appear the expression of charity, of humanity, of innocence, and of all their virtues. A young and beautiful female, labouring like *Penelope* at her web, and modestly dressed in a Grecian robe, with long plaits, would there no doubt present an object pleasing to every one : but I should think her a thousand times more interesting than the figure of *Penelope* herself, em-

played in the same labour, under the tatters of misfortune and misery.

There should be on those tombs no skeletons, no bat's wings, no Time with his scythe, no one of those terrifying attributes whereby our slavish education endeavours to inspire us with horror at the thought of death, that last benefit of Nature : but we should contemplate on them symbols which announce a happy and immortal life ; vessels, shattered by the tempest, arriving safe in port ; doves taking their flight toward Heaven, and the like.

The sacred effigies of virtuous citizens, crowned with flowers, with the characters of felicity, of peace, and of consolation in their faces, should be arranged toward the centre of the island, around a vast mossy down, under the trees of the Country, such as stately beech-trees, majestic pines, chesnut-trees loaded with fruit. There, likewise, should be seen the vine wedded to the elm, and the apple-tree of Normandy clothed with fruit of all the variety of colours which flowers display. From the middle of that down should ascend a magnificent temple in form of a rotundo. It should be surrounded with a peristyle of majestic columns, as was formerly at Rome the *Moles Adriani*. But I could wish it to be much more spacious. On the frize these words might appear :

To the love of the human race.

In the centre I would have an altar simple and unornamented, at which, on certain days of the year, divine service might be celebrated. No production of sculpture nor of painting, no gold nor jewels, should be deemed worthy of decorating the interior of this temple ; but sacred inscriptions should announce the kind of merit which there received the crown. All those who might repose within the precincts undoubtedly would not be Saints. But over the principal gate, in a tablet of white marble, these divine words might meet the eye :

Her Sins, which were many, are forgiven ; for she loved much.

On another part of the frize, the following inscription, which unfolds the nature of our duties, might be displayed :

Virtue is an Effort made upon Ourselves, for the Good of Men, in the View
of pleasing GOD only

To this might be subjoined the following, very much calculated to repress our ambitious emulation :

The smallest Act of Virtue is of more Value than the Exercise of the greatest Talents.

On other tablets might be inscribed maxims of trust in the Divine Providence, extracted from the Philosophers of all Nations ; such as the following, borrowed from the modern Persians :

When affliction is at the Height, then we are the most encouraged to look for Consolation. The narrowest Part of the Defile is at the Entrance of the Plain.*

And that other of the same country :

Whoever has cordially devoted his Soul to GOD, has effectually secured himself against all the Ills which can befall Him, both in this World, and in the next.

There might be inserted some of a philosophic cast, on the vanity of human things, such as the following :

Estimate each of your Days, by Pleasures, by Loves, by Treasures, and by Grandeurs ; the Last will accuse them all of Vanity.

Or that other, which opens to us a perspective of the life to come :

He who has provided Light for the Eye of Man, Sounds for his Ear, Perfumes for his Smell, and Fruits for his Palate, will find the Means of one Day replenishing his Heart, which nothing here below can satisfy.

And that other, which inculcates charity toward men from the motives of self-interest :

When a Man studies the World, he prizes those only who possess Sagacity ; but, when he studies Himself, he esteems only those who exercise Indulgence.

I would have the following inscribed round the cupola, in letters of antique bronze :

Mandatum novum do vobis, ut diligatis invicem ; sicut dilexi vos, ut et vos diligatis invicem.

JOHN, cap. xiii. v. 34.

A new Commandment I give unto you, that ye love one another ; as I have loved you, that ye also love one another.

* Chardin's Palace of Ispahan.

In order to decorate this temple externally with a becoming dignity, no ornaments would be necessary except those of Nature. The first rays of the rising, and the last of the setting Sun, would gild it's cupola, towering above the forests: in the day-time the fires of the South, and by night the lustre of the Moon, would trace it's majestic shadow on the spreading down: the Seine would repeat the reflexes of it in it's flowing stream. In vain would the tempest rage around it's enormous vault; and when the hand of Time should have bronzed it with moss, the oaks of the Country should issue from it's antique cornices, and the eagles of Heaven, hovering round and round, would resort thither to build their nests.

Neither talents, nor birth, nor gold, should constitute a title for claiming the honour of a monument in this patriotic and holy ground. But it will be asked, who is to judge, and to decide, the merits of the persons whose ashes are to be there deposited? The King alone should have the power of decision, and the people the privilege of reporting the cause. It should not be sufficient for a citizen, in order to his obtaining this sort of distinction, that he had cultivated a new plant in a hot-house or even in his garden; but it should be requisite to have it naturalized in the open field, and the fruit of it carried for sale to the public market. It ought not to be deemed sufficient that the model of an ingenious machine was preserved in the collection of an Artist, and approved by the Academy of Sciences; it should be required to have the machine itself in the hands of the People and converted to their use. It ought by no means to suffice, in order to establish the claim of a literary Work, that the prize had been adjudged to it by the French Academy; but that it should be read by that class of men for whose use it was designed. Thus, for example, a patriotic *Ode* should be accounted good for nothing, unless it were sung about the streets by the common people. The merit of a naval or military Commander should be ascertained, not by the report of Gazettes, but by the suffrages of the sailors or soldiery.

The people in truth distinguish hardly any other virtue in the citizen except beneficence: they consult only their own leading want; but their instinct on this article is conformable to the divine Law: for all the virtues terminate in that, even those which appear the most remote from it; and supposing there

were rich men who meant to captivate their affections by doing them good, that is precisely the feeling with which we propose to inspire them. They would fulfil their duties, and the lofty and the low conditions of humanity would be reduced to a state of approximation.

From an Institution of this kind would result the re-establishment of one of the Laws of Nature, of all others the most important to a Nation; I mean an inexhaustible perspective of infinity, as necessary to the happiness of a whole Nation as to that of an individual. Such is, as we have caught a glimpse in another place, the nature of the human mind; if it perceives not infinity in it's prospects, it falls back upon itself, and destroys itself by the exertion of it's own powers. Rome presented to the patriotism of her citizens the conquest of the World: but that object was too limited. Her last victory would have proved the commencement of her ruin. The establishment which I am now proposing is not subjected to this inconveniency. No object can possibly be proposed to Man more unbounded, and more profound, than that of his own latter end. There are no monuments more varied and more agreeable than those of virtue. Were there to be reared annually in this Elysium, but a single tablet of the marble of Brittany, or of the granite of Auvergne, there would always be the means of keeping the People awake, by the spectacle of novelty. The provinces of the kingdom would dispute with the Capital the privilege of introducing the monuments of their virtuous inhabitants.

What an august Tribunal might be formed of Bishops eminent for their piety, of upright Magistrates, of celebrated Commanders of Armies, to examine their several pretensions! What memoirs might one day appear, proper to create an interest in the minds of the People, who see nothing in their library but the sentences of death pronounced on illustrious criminals, or the lives of Saints, which are far above their sphere. How many new subjects for our men of letters, who have nothing for it but to trudge eternally over the beaten ground of the age of *Louis XIV.* or to prop up the reputation of the Greeks and Romans! What curious anecdotes for our wealthy voluptuaries! They pay a very high price for the history of an American insect, engraved in every possible manner, and studied through the microscope minute by minute, in all the phases

of it's existence. They would not have less pleasure in studying the manners of a poor collier, bringing up his family virtuously in the forest, in the midst of smugglers and banditti; or those of a wretched fisherman, who, in finding delicacies for their tables, is obliged to live like a heron in the midst of tempests.

I have no doubt that these monuments, executed with the taste which we are capable of displaying, would attract crowds of rich strangers to Paris. They resort hither already to live in it, they would then flock hither to die among us. They would endeavour to deserve well of a Nation become the arbiter of the virtues of Europe, and to acquire a last asylum in the holy land of this Elysium; where all virtuous and beneficent men would be reputed citizens. This establishment, which might be formed undoubtedly in a manner very superior to the feeble sketch which I have presented of it, would serve to bring the higher conditions of life into contact with the lower, much better than our churches themselves, into which avarice and ambition frequently introduce among the citizens distinctions more humiliating than are to be met with even in Society. It would allure foreigners to the Capital, by holding out to them the rights of a citizenship illustrious and immortal. It would unite, in a word, Religion to Patriotism, and Patriotism to Religion, the mutual bonds of which are on the point of being torn asunder.

It is not necessary for me to subjoin, that this establishment would be attended with no expense to the State. It might be reared and kept up, by the revenue of some rich abbey, as it would be consecrated to Religion and to the rewards of virtue. There is no reason why it should become, like the monuments of modern Rome, and even like many of our own royal monuments, an object of filthy lucre to individuals, who sell the sight of them to the curious. Particular care would be taken not to exclude the People, because they are meanly habited; nor to hunt out of it, as we do from our public gardens, poor and honest artisans in jackets, while well-dressed courtezans flaunt about with effrontery in their great alleys. The lowest of the commonalty should have it in their power to enter at all seasons. It is to you, O ye miserable of all conditions, that the sight of the friends of Humanity should of right appertain; and

your patrons are henceforth no where but among the statues of virtuous men! There, a soldier at sight of *Catinat* would learn to endure calumny. There, a girl of the town, sick of her infamous profession, would with a sigh cast her eyes down to the ground, on beholding the statue of modesty approached with honour and respect: but at a sight of that of a female of her own condition, reclaimed to the paths of virtue, she should raise them toward Him who preferred repentance to innocence.

It may be objected to me, That our poorer sort would very soon spread destruction over all those monuments; and it must indeed be admitted, that they seldom fail to treat in this manner those which do not interest them. There should undoubtedly be a police in this place; but the people respect monuments which are destined to their use. They commit ravages in a park, but do not wantonly destroy any thing in the open country. They would soon take the Elysium of their Country under their own protection, and watch over it with zeal much more ardent than that of Swiss and military guards.

Besides more than one method might be devised to render that spot respectable and dear to them. It ought to be rendered an inviolable asylum to the unfortunate of every description; for example, to fathers who have incurred the debt of a month's nursing of a child; and to those who have committed venial and inconsiderate faults; it would be proper to prohibit any arrest taking place there upon any one's person, except by an express warrant from the King under his own signature. This likewise should be the place to which laborious families out of employment might be directed to address themselves. There ought to be a strict prohibition to make it a place of alms-giving, but an unbounded permission to do good in it. Persons of virtue, who understand how to distinguish, and to employ men, would resort thither in quest of proper objects in whose behalf they might employ their credit; others, in the view of putting respect on the memory of some illustrious personage, would give a repast at the foot of his statue to a family of poor people. The State would set the example of this at certain favourite epochs, such as a festival in honour of the King's birth-day. Provisions might then be distributed among the populace, not by tossing loaves at their heads, as in our public rejoicings: but they might be classed, and made to sit down on the grass

in professional assemblies, round the statues of those who invented, improved, or perfected the several arts. Such repasts would have no resemblance to those which the rich sometimes give to the wretched, out of ceremony, and in which they respectfully wait upon their humble guests with napkins under their arm. The persons who gave the entertainment should be obliged to sit down at table with their company, and to eat and drink with them. It would be needless to impose on them the task of washing the feet of the poor; but they might be admonished of rendering to them a service of much more real importance, that of supplying them with shoes and stockings.

There the man of wealth would be instructed really to practise virtue, and the People to know it. The Nation would there learn their great duties, and be assisted in forming a just idea of true greatness. They would behold the homage presented to the memory of virtuous men, and the offerings tendered to the DEITY, ultimately applied to the relief of the miserable.

Such repasts would recal to our remembrance the love-feasts of the primitive Christians, and the Saturnalia of death, toward which every day is carrying us forward, and which, by speedily reducing us all to an estate of equality, will efface every other difference among us except that of the good which we shall have done in life.

In the days of other times, in order to do honour to the memory of virtuous men, the faithful assembled in places consecrated by their actions, or by their sepulchres, on the brink of a fountain, or under the shade of a forest. Thither they had provisions carried, and invited those who had none to come and partake with them. The same customs have been common to all religions. They still subsist in those of Asia. You find them prevailing among the ancient Greeks. When *Xenophon* had accomplished that famous retreat by which he saved ten thousand of his compatriots, ravaging, as he went, the territory of Persia, he destined part of the booty thus obtained, to the founding of a chapel in Greece to the honour of *Diana*. He attached to it a certain revenue, which should annually supply with the amusement of the chace, and with a plentiful repast, all persons who should repair to it on a particular day.

OF THE CLERGY.

If our poor are sometimes partakers of some wretched ecclesiastical distribution, the relief which they thence derive, so far from delivering them out of their misery, only serves to continue them in it. What landed property however has been bequeathed to the Church expressly for their benefit? Why then are not the revenues distributed, in sums sufficiently large to rescue annually from indigence at least a certain number of families? The Clergy allege that they are the administrators of the goods of the poor: but the poor are neither ideots nor madmen to stand in need of administrators: besides, it is impossible to prove by any one passage of either the Old or New Testament, that this charge pertained to the priesthood: if they really are the administrators of the poor, they have then no less than seven millions of persons in the kingdom under their temporal administration. I shall push this reflection no farther. It is a matter of unchangeable obligation to render to every one his due: the priests are by divine right the agents of the poor, but the King alone is the natural administrator.

As indigence is the principal cause of the vices of the People, opulence may, like it, produce in it's turn irregularities in the Clergy. I shall not avail myself here of the reprehensions of *St. Jerome*, of *St. Bernard*, of *St. Augustin*, and of the other Fathers of the Church, to the Clergy of their times, and of the Countries in which they lived; wherein they predicted to them the total destruction of Religion, as a necessary consequence of their manners and of their riches. The prediction of several of them was speedily verified in Africa, in Asia, in Judea, and in the Grecian Empire, in which not only the religion, but the very civil government of those Nations, totally disappeared. The avidity of most ecclesiastics soon renders the functions of the Church suspicious: this is an argument which strikes all men. I believe witnesses, said *Pascal*, who brave death. This reasoning however must be admitted with many grains of allowance; but no objection can be offered to this: I distrust witnesses who are enriching themselves by their testimony. Religion in truth has proofs natural and supernatural, far superior to those which men are capable of furnishing it with. She is independent of

our regularity and of our irregularity ; but our Country depends on these.

The world at this day looks on most priests with an eye of envy ; Shall I say of hatred ? But they are the children of their age, just like other men. The vices which are laid to their charge belong partly to their Nation, partly to the times in which they live, to the political constitution of the State, and to their education. Ours are Frenchmen like ourselves ; they are our kinsmen, frequently sacrificed to our own fortune, through the ambition of our fathers. Were we charged with the performance of their duties, we should frequently acquit ourselves worse than they do. I know of none so painful, none so worthy of respect, as those of a good ecclesiastic.

I do not speak of those of a Bishop, who exercises a vigilant care over his diocese, who institutes judicious seminaries of instruction, who maintains regularity and peace in communities, who resists the wicked and supports the weak, who is always ready to succour the miserable, and who, in this age of error, refutes the objections of the enemies of the faith by his own virtues. He has his reward in the public esteem. It is possible to purchase by painful labours the glory of being a *Fenelon*, or a *Juigné*. I say nothing of those of a parish-minister, which, from their importance, sometimes attract the attention of Kings ; nor of those of a missionary advancing to the crown of martyrdom. The conflicts of this last frequently endure but for a single day, and his glory is immortal. But I speak of those of a simple and obscure parish-drudge, to whom no one pays any manner of attention. He is under the necessity, in the first place, of sacrificing the pleasures and the liberty of his juvenile days, to irksome and painful studies. He is obliged to support all the days of his life the exercise of his continency, like a cumbersome cuirass, on a thousand occasions which endanger the loss of it. The world honours theatrical virtues only, and the victories of a single moment. But to combat day after day an enemy lodged within the fortress, and who makes his approaches under the disguise of a friend ; to repel incessantly, without a witness, without glory, without applause, the most impetuous of passions and the gentlest of propensities—this is not easy.

Conflicts of another kind await him from without. He is every day called upon to expose his life to the attack of epide-

mical distempers. He is obliged to confess, with his head on the same pillow, persons attacked with the small-pox, with the putrid and the purple fever. This obscure fortitude appears to me very far superior to the courage of a soldier. The military man combats in the view of armies, animated with the noise of cannon and drums; he presents himself to the stroke of death as a hero. But the priest devotes himself to it as a victim. What fortune can this last promise himself from his labours? In many cases, a precarious subsistence at most! Besides, supposing him to have acquired wealth, he cannot transmit it to his descendants. He beholds all his temporal hopes ready to expire with him. What indemnification does he receive from men? To be called upon many a time to administer the consolations of Religion to persons who do not believe it; to be the refuge of the poor, with nothing to give them; to be sometimes persecuted for his very virtues; to see his conflicts treated with contempt, his best-intentioned actions mis-interpreted into artifice, his virtues transformed into vices, his religion turned into ridicule. Such are the duties imposed, and such the recompense which the World bestows on the men whose lot it envies.

This is what I have assumed the courage to propose for the happiness of the People, and of the principal orders of the State, in so far as I have been permitted to submit my ideas to the public eye. Many Philosophers and Politicians have declaimed against the disorders of Society without troubling themselves to enquire into their causes, and still less into the remedies which might be applied. Those of the greatest ability have viewed our evils only in detail, and have recommended palliatives merely. Some have proscribed luxury; others give no quarter to celibacy, and would load with the charge of a family persons who have not the means of supplying their personal necessities. Some are for incarcerating all the beggars; others would prohibit the wretched women of pleasure to appear in the streets. They would act in the manner which that physician does, who in order to cure the pimples on the body of a person out of order, uses all his skill to force back the humours. Politicians, you apply the remedy to the head, because the pain is in the forehead; but the mischief is in the nerves: it is for the heart you must provide a cure; it is the People whose health you must endeavour to restore.

Should some great minister, animated with a noble ambition to procure for us internal happiness, and to extend our power externally, have the courage to undertake a re-establishment of things, he must in his course of procedure imitate that of Nature. She acts in every case slowly, and by means of re-actions. I repeat it, the cause of the prodigious power of gold, which has robbed the People at once of their morality and of their subsistence, is in the venality of public employments. That of the beggary, which at this day extends to seven millions of subjects, consists in the enormous accumulation of landed and official property. That of female prostitution is to be imputed, on the one hand, to extreme indigence; and on the other to the celibacy of two millions of men. The unprofitable superabundance of the idle and censorious burghers in our second and third-rate cities, arises from the imposts which degrade the inhabitants of the country. The prejudices of the nobility are kept alive by the resentments of those who want the advantage of birth; and all these evils, and others innumerable, physical and intellectual, spring up out of the misery of the People. It is the indigence of the People which produces such swarms of players, courtezans, highwaymen, incendiaries, licentious scholars, calumniators, flatterers, hypocrites, mendicants, kept-mistresses, quacks of all conditions, and that infinite multitude of corrupted wretches, who, incapable of coming to any thing by their virtues, endeavour to procure bread and consideration by their vices. In vain will you oppose to these plans of finance, projects of equalization of taxes and tythes, of ordonnances of Police, of arrets of Parliament; all your efforts will be fruitless. The indigence of the People is a mighty river, which is every year collecting an increase of strength, which is sweeping away before it every opposing mound, and which will issue in a total subversion of order and government.

To this physical cause of our distresses must be added another purely moral! I mean our education. I shall venture to suggest a few reflections on this subject, though it far exceeds my highest powers: but if it be the most important of our abuses, it appears to me, on the other hand, the most easily susceptible of reformation; and this reform appears to me so absolutely necessary, that without it all the rest goes for nothing.

STUDY XIV.

OF EDUCATION.

“ TO what higher object,” says *Plutarch*,* “ could *Numa* have directed his attention, than to the culture of early infancy, and to uniformity in the treatment of young persons ; in the view of preventing the collision of different manners, and turbulency of spirit arising from diversity of nature ? Thus he proposed to harmonize the minds of men, in a state of maturity, from their having been, in childhood, trained in the same habits of order, and cast into the same mould of virtue. This, independent of other advantages, greatly contributed likewise to the support of the Laws of *Lycurgus* ; for respect to the oath, by which the Spartans had bound themselves, must have produced a much more powerful effect, from his having by early instruction and nurture *dyed in the wool*, if I may use the expression, the morals of the young, and made them suck in with the milk from their nurse’s breast the love of his Laws and Institutions.”

Here is a decision which completely condemns our mode of education, by pronouncing the elogium of that of Sparta. I do not hesitate a single moment to ascribe to our modern education the restless, ambitious, spiteful, pragmatistical, and intolerant spirit of most Europeans. The effects of it are visible in the miseries of the Nations. It is remarkable, that those which have been most agitated internally and externally, are precisely the Nations among which our boasted style of education has flourished the most. The truth of this may be ascertained, by stepping from country to country, from age to age. Politicians have imagined, that they could discern the cause of public misfortunes in the different forms of Government. But Turkey is quiet, and England is frequently in a state of agitation. All political forms are indifferent to the happiness of a State, as has

* Comparison of *Numa* and *Lycurgus*.

been said, provided the people are happy. We might have added, and provided the children are so likewise.

The Philosopher *Laloubere*, envoy from *Louis XIV.* to Siam, says, in the account which he gives of his mission, that the Asiatics laugh us to scorn, when we boast to them of the excellence of the Christian Religion, as contributing to the happiness of States. They ask, on reading our Histories, How it is possible that our Religion should be so humane, while we wage war ten times more frequently than they do? What would they say then did they see among us our perpetual law-suits, the malicious censoriousness and calumny of our societies, the jealousy of corps, the quarrels of the populace, the duels of the better sort, and our animosities of every kind, nothing similar to which is to be seen in Asia, in Africa, among the Tartars, or among Savages, on the testimony of missionaries themselves? For my own part, I discern the cause of all these particular and general disorders in our ambitious education. When a man has drunk, from infancy upward, into the cup of ambition, the thirst of it cleaves to him all his life long, and it degenerates into a burning fever at the very feet of the altars.

It is not Religion assuredly which occasions this. I cannot explain how it comes to pass that kingdoms calling themselves Christian should have adopted ambition as the basis of public education. Independently of their political constitution, which forbids it to all those of their subjects who have not money, that is to the greatest part of them, there is no passion so uniformly condemned by Religion. We have observed, that there are but two passions in the heart of Man, love and ambition. Civil Laws denounce the severest punishment against the excesses of the first: they repress, as far as their power extends, the more violent emotions of it. Prostitution is branded with infamous penalties; and in some countries adultery is punished even with death. But these same Laws meet the second more than half way; they every where propose to it prizes, rewards and honours. These opinions force their way, and exercise dominion, in cloisters themselves. It is a grievous scandal to a convent if the amorous intrigues of a monk happen to take air; but what eulogiums are bestowed on those which procure for him a cardinal's hat! What raillery, imprecation, and malediction, are the portion of imprudent weakness! What gentle and honourable

epithets are applied to audacious craft ! Noble emulation, love of glory, spirit, intelligence, merit rewarded. With how many glorious appellations do we palliate intrigue, flattery, simony, perfidy, and all the vices which walk, in all States, in the train of the ambitious !

This is the way in which the world forms it's judgments ; but Religion, ever conformable to Nature, pronounces a very different decision on the characters of these two passions. JESUS invites the communications of the frail Samaritan woman, he pardons the adulteress, he absolves the female offender who bathed his feet with her tears ; but hear how he inveighs against the ambitious :—" Wo unto you, Scribes and Pharisees, for ye
 " love the uppermost seats in the synagogues, and the chief
 " places at feasts, and greetings in the markets, and to be called
 " of men, Rabbi ! Wo unto you, also, ye Lawyers ; for ye lade
 " men with burdens greivous to be borne, and ye yourselves
 " touch not the burdens with one of your fingers ! Wo unto you,
 " Lawyers, for ye have taken away the key of knowledge : ye
 " entered not in yourselves, and them that were entering in ye
 " hindered ;" and so on.* He declares to them, that notwithstanding their empty honours in this World, harlots should go before them into the kingdom of God. He cautions us, in many places, to be on our guard against them ; and intimates that we should know them by their fruits. In pronouncing decisions so different from ours, He judges our passions according to their natural adaptations. He pardons prostitution, which is in itself a vice, but which after all is a frailty only, relative to the order of Society ; and He condemns, without mercy, the sin of ambition, as a crime which is contrary at once to the order of Society, and to that of Nature. The first involves the distress of only two guilty persons, but the second affects the happiness of Mankind.

To this our Doctors reply, that the only object pursued in the education of children, is the inspiring them with a virtuous emulation. I do not believe there is such a thing in our Colleges as exercises of virtue, unless it be to prescribe to the students, on this subject, certain themes or amplifications. But a real ambition is taught, by engaging them to dispute the first place in

* Luke xi. 43, &c.

their several classes, and to adopt a thousand intolerant systems. Accordingly, when they have once got the key of knowledge in their pocket, they resolutely determine, like their masters, to let no one enter but by their door.

Virtue and ambition are absolutely incompatible. The glory of ambition is to mount, and that of virtue is to descend. Observe how JESUS CHRIST reprimands his Disciples when they asked him who should be the first among them. He takes a little child, and places him in the midst: not, surely, a child from our schools. Ah! when he recommends to us the humility so suitable to our frail and miserable condition, it is because he did not consider that power, even supreme, was capable of constituting our happiness in this World; and it is worthy of being remarked, that he did not confer the superiority over the rest on the Disciple whom he loved the most; but as a reward to the love of him who had been faithful unto death, He bequeathed to him, with his dying breath, his own mother as a legacy.

This pretended emulation, instilled into children, renders them for life intolerant, vain-glorious, tremblingly alive to the slightest censure, or to the meanest token of applause from an unknown person. They are trained to ambition, we are told, for their good, in order to their prospering in the World; but the cupidity natural to the human mind is more than sufficient for the attainment of that object. Have merchants, mechanics, and all the lucrative professions, in other words, all the conditions of Society; have they need of any other stimulus? Were ambition to be instilled into the mind of only one child, destined at length to fill a station of high importance, this education, which is by no means exempted from inconveniences, would be adapted at least to the career which the young man had in prospect. But by infusing it into all, you give each individual as many opponants as he has got companions; you render the whole unhappy, by means of each other. Those who are incapable of rising by their talents, endeavour to insinuate themselves into the good graces of their masters by flattery, and to supplant their equals by calumny. If these means succeed not, they conceive an aversion for the objects of their emulation, which, to their comrades, has all the value of applause, and becomes to themselves a perpetual source of depression, of chastisement, and of tears.

This is the reason that so many grown men, endeavour to banish from their memory the times and the objects of their early studies, though it be natural to the heart of Man to recollect with delight the epochs of infancy. How many behold, in the maturity of life, the bowers of osiers and the rustic canopies which served for their infant sleeping and dining apartments, who could not look without abhorrence upon a *Turselin*, or a *Despauter* ! I have no doubt that those disgusts of early education extend a most baneful influence to that love with which we ought to be animated toward Religion, because it's elements, in like manner, are displayed only through the medium of gloom, pride, and inhumanity.

The plan of most masters consists above all in composing the exterior of their pupils. They form on the same model a multitude of characters which Nature had rendered essentially different. One will have his disciples to be grave and stately, as if they were so many little presidents ; others, and they are the most numerous, wish to make theirs alert and lively. One of the great burdens of the lesson is an incessant fillip of : " Come on, make haste, don't be lazy." To this impulsion simply I ascribe the general giddiness of our youth, and of which the Nation is accused. It is the impatience of the master which in the first instance produces the precipitancy of the scholars. It afterwards acquires strength in the commerce of the World, from the impatience of the women. But through the progress of human life, Is not reflection of much higher importance than promptitude ? How many children are destined to fill situations which require seriousness and solemnity ? Is not reflection the basis of prudence, of temperance, of wisdom, and of most of the other moral qualities ? For my own part, I have always seen honest people abundantly tranquil, and rogues always alert.

There is in this respect a very perceptible difference between two children, the one of whom has been educated in his Father's house, and the other at a public school. The first is beyond all contradiction more polite, more ingenuous, less jealously disposed ; and from this single circumstance, that he has been brought up without the desire of excelling any one, and still less of surpassing himself, according to our great fashionable phraseology, but which is as destitute of common sense as many others of the kind. Is not a child, influenced by the emulation of the

schools, under the necessity of renouncing it, from the very first step he makes in the World, if he means to be supportable to his equals, and to himself? If he proposes to himself no other object but his own advancement, Will he not be afflicted at the prosperity of another? Will he not, in the course of his progress, be liable to have his mind torn with the aversions, the jealousies and the desires, which must deprave it, both physically and morally? Do not Philosophy and Religion impose on him the necessity of exerting himself every day of his life, to eradicate those faults of education? The world itself obliges him to mask their hideous aspect. Here is a fine perspective opened to human life, in which we are constrained to employ the half of our days in destroying, with a thousand painful efforts, what had been raising up in the other with so many tears and so much parade.

We have borrowed those vices from the Greeks, without being aware that they had contributed to their perpetual divisions, and to their final ruin. The greatest part at least of their exercises, had the good of their Country as the leading object. If there were proposed among the Greeks prizes for superiority in wrestling, in boxing, in throwing the quoit, in foot and chariot races, it was because such exercises had a reference to the art of war. If they had others established for the reward of superior eloquence, it was because that art served to maintain the interests of Country, from city to city, or in the general Assemblies of Greece. But to what purpose do we employ the tedious and painful study of dead languages, and of customs foreign to our Country? Most of our institutions, with relation to the Ancients, have a striking resemblance to the paradise of the Savages of America. Those good people imagine that after death the souls of their compatriots migrate to a certain country. where they hunt down the souls of beavers with the souls of arrows, walking over the soul of snow with the soul of rackets. and that they dress the soul of their game in the soul of pots. We have in like manner the images of a Coliseum, where no spectacles are exhibited; images of peristyles and public squares in which we are not permitted to walk; images of antique vases in which it is impossible to put any liquor, but which contribute largely to our images of grandeur and patriotism. The real Greeks, and the real Romans, would believe themselves

among us to be in the land of their shades. Happy would it have been for us had we borrowed from them vain images only, and not naturalized in our Country their real evils, by transplanting thither the jealousies, the hatreds, and the vain emulations which rendered them miserable.

It was *Charlemagne*, we are told, who instituted our course of studies ; and some say it was in the view of dividing his subjects, and of giving them employment. He has succeeded in this to a miracle. Seven years devoted to *humanity* or *classical learning*, two to *Philosophy*, three to *Theology* : twelve years of languor, of ambition, and of self-conceit ; without taking into the account the years which well-meaning parents double upon their children, to make sure work of it as they allege. I ask whether on emerging thence a student is, according to the denomination of those respective branches of study, more *humane*, more of a *philosopher*, and *believes* more in GOD, than an honest peasant who has not been taught to read ? What good purpose then does all this answer to the greatest part of Mankind ? What benefit do the majority derive from this irksome course, on mixing with the World, toward perfecting their own intelligence, and even toward purity of diction. We have seen, that the classical Authors themselves have borrowed their illumination only from Nature, and that those of our own Nation who have distinguished themselves the most in literature and in the sciences, such as *Descartes*, *Michael Montaigne*, *J. J. Rousseau*, and others, have succeeded only by deviating from the track which their models pursued, and frequently by pursuing the directly opposite path. Thus it was that *Descartes* attacked and subverted the philosophy of *Aristotle* : you would be tempted to say, that Eloquence and the Sciences are completely out of the province of our Gothic Institutions.

I acknowledge at the same time that it is a fortunate circumstance for many children, those who have wicked parents, that there are colleges ; they are less miserable there than in the father's house. The faults of masters being exposed to view, are in part repressed by the fear of public censure ; but it is not so as to those of their parents. For example, the pride of a man of letters is loquacious, and sometimes instructive ; that of an ecclesiastic is clothed with dissimulation, but flattering ; that of a man of family is lofty, but frank ; that of a clown is

insolent, but natural : but the pride of a warm tradesman is sullen and stupid ; it is pride at it's ease, pride in a night-gown. As the cit is never contradicted, except it be by his wife, they unite their efforts to render their children unhappy, without so much as suspecting that they do so. Is it credible that in a society, the men of which all moralists allow to be corrupted, in which the citizens maintain their ground only by the terror of the Laws, or by the fear which they have of each other, feeble and defenceless children should not be abandoned to the discretion of tyranny ? Nothing can be conceived so ignorant, and so conceited, as the greatest part of tradesmen ; among them it is that folly shoots out spreading and profound roots. You see a great many of this class, both men and women, dying of apoplectic fits, from a too sedentary mode of life ; from eating beef, and swallowing strong broths, when they are out of order, without suspecting for a moment that such a regimen was pernicious. Nothing can be more wholesome say they ; they have always seen their Aunts do so. Hence it is that a multitude of false remedies and of ridiculous superstitions, maintain a reputation among them, long after they have been exploded in the World. In their cup-boards is still carefully treasured up the *cassis*, a species of poison, as if it were an universal panacea. The regimen of their unfortunate children resembles that which they employ where their own health is concerned ; they form them to melancholy habits ; all that they make them learn, up to the Gospel itself, is with the rod over their head ; they fix them in a sedentary posture all the day long, at an age when Nature is prompting them to stir about, for the purpose of expanding their form. Be good children, is the perpetual injunction ; and this goodness consists in never moving a limb. A woman of spirit who was fond of children, took notice one day, at the house of a shop-keeper in St. Denis-street, of a little boy and girl who had a very serious air. " Your children are " very grave," said she to the mother..... " Ah ! Madam," replied the sagacious shop-dame, " it is not for want of whipping " if they are not so."

Children rendered miserable in their sports, and in their studies, become hypocritical and reserved before their fathers and mothers. At length however they acquire stature. One night the daughter puts on her cloke, under pretence of going to even-

ing prayers, but it is to give her lover the meeting : by and by her shapes divulge the secret ; she is driven from her father's house, and comes upon the town. Some fine morning the son enlists for a soldier. The father and mother are ready to go distracted. We spared nothing, say they, to procure them the best of education : they had masters of every kind : Fools ! you forgot the essential point ; you forgot to teach them to love you.

They justify their tyranny by that cruel adage : *Children must be corrected ; human nature is corrupted.* They do not perceive that they themselves, by their excessive severity, stand chargeable with the corruption,* and that in every country where fathers are good, the children resemble them.

* To certain species of chastisement I ascribe the physical and moral corruption not only of children, and of several orders of monks, but of the Nation itself. You cannot move a step through the streets without hearing nurses and mothers menacing their little charge with, *I shall give you a flogging.* I have never been in England, but I am persuaded, that the ferocity imputed to the English must proceed from some such cause. I have indeed heard it affirmed, that punishment by the rod was more cruel, and more frequent, among them, than with us. See what is said on this subject by the illustrious Authors of the *Spectator*, a Work which has beyond contradiction greatly contributed to soften both their manners and ours. They reproach the English Nobility for permitting this character of infamy to be impressed on their children. Consult, particularly, No. CLVII. of that Collection, which concludes thus : “ I would not here be supposed to have said, that our learned men of either robe, who have been whipped at school, are not still men of noble and liberal minds ; but I am sure they had been much more so than they are, had they never suffered that infamy.”

Government ought to proscribe this kind of chastisement, not only in the public schools, as Russia has done, but in convents, on ship-board, in private families, in boarding-houses : it corrupts at once fathers, mothers, preceptors, and children. I could quote terrible re-actions of it, did modesty permit. Is it not very astonishing, that men in other respects of a staid and serious exterior, should lay down as the basis of a Christian education, the observance of gentleness, humanity, chastity ; and punish timid and innocent children with the most barbarous, and the most obscure of all chastisements ? Our men of letters who have been employed in reforming abuses for more than a century past, have not attacked this with the severity which it deserves. They do not pay sufficient attention to the miseries of the rising generation. It would be a question of right, the discussion of which were highly interesting and important, namely, Whether the State could permit the right of inflicting infamous punishment, to persons who have not the power of life and death ? It is certain that the infamy of a citizen produces re-actions more dangerous to Society, than his own death merely. It is nothing at all, we are told, they are but children ; but for this very reason, because they

I could demonstrate by a multitude of examples, that the depravation of our most notorious criminals began with the cruelty of their education, from *Guillery* down to *Desrues*. But, to take leave once for all of this horrid perspective, I conclude with a single reflection: namely, if human nature were corrupted, as is alleged by those who arrogate to themselves the power of reforming it, children could not fail to add a new corruption to that which they find already introduced into the World, upon their arrival in it. Human Society would accordingly speedily reach the term of it's dissolution. But children, on the contrary, protract and put off that fatal period, by the introduction of new and untainted souls. It requires a long apprenticeship to inspire them with a taste for our passions and extravagancies. New generations resemble the dews and the rains of Heaven, which refresh the waters of rivers slackened in their course, and tending to corruption: change the sources of a river, and you will change it in the stream; change the education of a People, and you will change their character and their manners.

We shall hazard a few ideas on a subject of so much importance, and shall look for the indications of them in Nature. On examining the nest of a bird, we find in it not only the nutriments which are most agreeable to the young, but from the softness of the downs with which it is lined; from it's situation, whereby it is sheltered from the cold, from the rain, and from

are children, every generous spirit is bound to protect them, and because every miserable child becomes a bad man.

At the same time, it is far from being my intention, in what I have said respecting masters in general, to render the profession odious. I only mean to suggest to them, that those chastisements, the practice of which they have borrowed from the corrupted Greeks of the Lower Empire, exercise an influence much more powerful than they are aware of, on the hatred which is borne to them, as well as to the other ministers of Religion, monks as well as the regular clergy, by a people more enlightened than in former times. After all, it must be granted, that masters treat their pupils as they themselves were treated. One set of miserable beings are employed in forming a new set, frequently without suspecting what they are doing. All I aim at present to establish is, That man has been committed to his own foresight; that all the ill which he does to his fellow-creatures recoils sooner or later upon himself. This re-action is the only counterpoise capable of bringing him back to humanity. All the Sciences are still in a state of infancy; but that of rendering men happy has not as yet so much as seen the light, not even in China, whose politics are so far superior to ours

the wind; and from a multitude of other precautions, it is easy to discern that those who constructed it, collected around their brood, all the intelligence, and all the benevolence of which they were capable. The father too sings at a little distance from their cradle, prompted rather, as I suppose, by the solitudes of paternal affection, than by those of conjugal love; for this last sentiment expires in most, as soon as the process of hatching begins. If we were to examine, under the same aspect, the schools of the young of the human species, we should have a very indifferent idea of the affection of their parents. Rods, whips, stripes, cries, tears, are the first lessons given to human life: we have here and there, it is true, a glimpse of reward, amidst so many chastisements; but, symbol of what awaits them in Society, the pain is real and the pleasure only imaginary.

It is worthy of being remarked, that of all the species of sensible beings, the human species is the only one whose young are brought up, and instructed, by dint of blows. I would not wish for any other proof of an original depravation of Mankind. The European brood, in this respect, surpasses all the Nations of the Globe; as they likewise do in wickedness. We have already observed, on the testimony of missionaries themselves, with what gentleness Savages rear their children, and what affection the children bear to their parents in return.

The Arabs extend their humanity to the very horses; they never beat them; they manage them by means of kindness and caresses, and render them so docile, that there are no animals of the kind in the whole World once to be compared with them in beauty and in goodness. They do not fix them to a stake in the fields, but suffer them to pasture at large around their habitation, to which they come running the moment that they hear the sound of their master's voice. Those tractable animals resort at night to their tents, and lie down in the midst of the children, without ever hurting them in the slightest degree. If the rider happens to fall while a-coursing, his horse stands still instantly, and never stirs till he has mounted again. These people, by means of the irresistible influence of a mild education, have acquired the art of rendering their horses the first coursers of the universe.

It is impossible to read without being melted into tears, what is related on this subject by the virtuous Consul *d' Hervieux*, in his journey to Mount Lebanon. The whole stock of a poor Arabian of the Desert consisted of a most beautiful mare. The French Consul at Said offered to purchase her, with an intention to send her to his master *Louis XIV.* The Arab pressed by want, hesitated a long time ; but at length consented, on condition of receiving a very considerable sum which he named. The Consul, not daring, without instructions, to give so high a price, wrote to Versailles for permission to close the bargain on the terms stipulated. *Louis XIV.* gave orders to pay the money. The Consul immediately sent notice to the Arab, who soon after made his appearance, mounted on his magnificent courser, and the gold which he had demanded was paid down to him. The Arab, covered with a miserable rug, dismounts, looks at the money ; then, turning his eyes to the mare, he sighs, and thus accosts her : “ To whom am I going to yield thee “ up ? To Europeans, who will tie thee close, who will beat thee, “ who will render thee miserable : return with me, my beauty, “ my darling, my jewel ! and rejoice the hearts of my children ! ” As he pronounced these words, he sprung upon her back, and scampered off toward the Desert.

If, with us, fathers beat their children, it is because they love them not ; if they send them abroad to nurse as soon as they come into the World, it is because they love them not ; if they place them as soon as they have acquired a little growth, in boarding-schools and colleges, it is because they love them not ; if they procure for them situations out of their State, out of their Province, it is because they love them not : if they keep them at a distance from themselves at every epoch of life, it must undoubtedly be, because they look upon them as their heirs.

I have been long enquiring into the cause of this unnatural sentiment, but not in our books ; for the Authors of these, in the view of paying court to fathers who buy their Works, insist only on the duties of children ; and if sometimes they bring forward those of fathers, the discipline which they recommend to them, respecting their children, is so gloomy and severe, that it looks as if they were furnishing parents with new means of rendering themselves hateful to their offspring.

This parental apathy is to be imputed to the disorderly state of our manners, which has stifled among us all the sentiments of Nature. Among the Ancients, and even among Savages, the perspective of social life presented to them a series of employments, from infancy up to old age, which among them was the era of the higher magistracies, and of the priesthood. The hopes of their religion, at that period, interposed to terminate an honourable career, and concluded with rendering the plan of their life conformable to that of Nature. Thus it was that they always kept up in the soul of their citizens that perspective of infinity which is so natural to the heart of Man. But venality and debauched manners having subverted, among us, the order of Nature, the only age of human existence which has preserved it's rights is that of youth and love. This is the epoch to which all the citizens direct their thoughts. Among the Ancients the aged bear rule ; but with us the young people assume the government. The old are constrained to retire from all public employment. Their dear children then pay them back the fruits of the education which they had received from them.

Hence therefore it comes to pass, that a father and mother restricting with us, the epoch of their felicity to the middle period of life, cannot without uneasiness behold their children approaching toward it, just in proportion as they themselves are withdrawing from it. As their faith is almost, or altogether, extinguished, Religion administers to them no consolation. They behold nothing but death closing their perspective. This point of view renders them sullen, harsh, and frequently cruel. This is the reason that, with us, parents do not love their children, and that our old people affect so many frivolous tastes, to bring themselves nearer to a generation which is repelling them.

Another consequence of the same state of manners is, that we have nothing of the spirit of patriotism among us. The Ancients, on the contrary, had a great deal of it. They proposed to themselves a noble recompense in the present, but one still much more noble in the future. The Romans, for example, had oracles which promised to their City that she should become the Capital of the World, and she actually became so. Each citizen in particular flattered himself with the hope of exercising an influence over her destiny, and of presiding one day as a tutelar deity over that of his own posterity. Their highest

ambition was to see their own age honoured and distinguished above every other age of the Republic. Those among us who have any ambition that regards futurity, restrict it to their being themselves distinguished by the age in which they live, for their knowledge or their philosophy. In this nearly terminates our natural ambition, directed as it is by our mode of education.

The ancients employed their thoughts in prognosticating the character and condition of their posterity; and we revolve what our Ancestors were. They looked forward, and we looked backward. We are in the State, like passengers embarked against their will on board a vessel; we look toward the poop and not to the prow; to the land from which we are taking our departure, and not to that on which we hope to arrive. We collect with avidity Gothic manuscripts, monuments of chivalry, the medallions of *Childeric*; we pick up with ardour all the worn out fragments of the ancient fabric of our State vessel. We pursue them in a backward direction as far as the eye can carry us. Nay we extend this solicitude about Antiquity on monuments which are foreign to us; to those of the Greeks and Romans. They are like our own the wrecks of their vessels, which have perished on the vast Ocean of Time, without being able to get forward to us. They would have been accompanying us, nay they would have been out-sailing us, had skilful pilots always stood at the helm. It is still possible to distinguish them from their shattered fragments. From the simplicity of her construction, and the lightness of her frame, that must have been the Spartan frigate. She was made to swim eternally; but she had no bottom; she was overtaken by a dreadful tempest; and the Helots were incapable of restoring the equilibrium. From the loftiness of her quarter galleries, you there distinguish the remains of the mighty first-rate of proud Rome. She was unable to support the weight of her unwieldy turrets; her cumbersome and ponderous upper-works overset her. The following inscriptions might be engraved on the different rocks against which they have made shipwreck:

Love of Conquest. Accumulation of Property. Venality of Employments.
And, above All: Contempt of the People.

The billows of Time still roar over their enormous wrecks, and separate them from detached planks, which they scatter

among modern Nations for their instruction. Those ruins seem to address them thus: "We are the remains of the ancient government of the Tuscans, of Dardanus, and of the grandchildren of Numitor. The States which they have transmitted to their descendants still support Nations of Mankind; but they no longer have the same languages, nor the same religions, nor the same civil dynasties. Divine Providence in order to save men from shipwreck, has drowned the pilots, and dashed the ship to pieces."

We admire, on the contrary, in our frivolous Sciences, their conquests, their vast and useless buildings, and all the monuments of their luxury, which are the very rocks on which they perished. See, to what our studies, and our patriotism, are leading us. If posterity is taken up with the Ancients, it is because the Ancients laboured for posterity: but if we do nothing for ours, assuredly they will pay no attention to us. They will talk incessantly as we do about the Greeks and Romans, without wasting a single thought upon their fathers.

Instead of falling into raptures over Greek and Roman medallions, half devoured by the teeth of Time, would it not be fully as agreeable, and much more useful, to direct our views and employ our conjectures, on the subject of our fresh, lively, plump children, and to try to discover in their several inclinations, who are to be the future co-operators in the service of their Country? Those who in their childish sports are fond of building, will one day rear her monuments. Among those who take delight in managing their boyish skirmishes, will be formed the *Epaminondases* and the *Scipios* of future times. Those who are seated upon the grass, the calm spectators of the sports of their companions, will in due time become excellent Magistrates and Philosophers, the complete masters of their own passions. Those who in their restless course love to withdraw from the rest, will be noted travellers and founders of colonies, who shall carry the manners, and the language of France, to the savages of America, or into the interior of Africa itself.

If we are kind to our children they will bless our memory; they will transmit, unaltered, our customs, our fashions, our education, our government, and every thing that awakens the recollection of us, to the very latest posterity. We shall be to them beneficent deities, who have wrought their deliverance from Go-

thic barbarism. We should gratify the innate taste of infinity still better, by launching our thoughts into a futurity of two thousand years, than into a retrospect of the same distance. This manner of viewing, more conformable to our divine nature, would fix our benevolence on sensible objects which do exist, and which still are to exist.* We should secure to ourselves, as a support to an old age of sadness and neglect, the gratitude of the generation which is advancing to replace us ? and, by providing for their happiness and our own, we should combine all the means in our power toward promoting the good of our Country.

In order to contribute my little mite toward so blessed a revolution, I shall hazard a few more hasty ideas. I proceed on the supposition then, that I am empowered to employ usefully a part of the twelve years which our young people waste at schools and colleges. I reduce the whole time of their education to three epochs, consisting of three years each. The first should commence at the age of seven years, as among the Lacedemonians, and even earlier : a child is susceptible of a patriotic education as soon as he is able to speak and to walk. The second shall begin with the period of adolescence ; and the third end with it, toward the age of sixteen, an age when a young man may begin to be useful to his Country, and to assume a profession.

* There is a sublime character in the Works of the DIVINITY. They are not only perfect in themselves, but they are always in a progressive state toward perfection. We have suggested some thoughts respecting this Law, in speaking of the harmonies of plants. A young plant is of more value than the seed which produced it ; a tree bearing flowers and fruits is more valuable than the young plant ; finally, a tree is never more beautiful than when, declined into years, it is surrounded with a forest of young trees, sprouted up out of it's seeds. The same thing holds good as to Man. The state of an embryo is superior to that of a non-entity ; that of infancy to the embryo ; adolescence is preferable to infancy ; and youth, the season of loves, more important than adolescence. Man in a state of maturity, the head of a family, is preferable to a young man. The old age which encircles him with a numerous posterity ; which, from it's experience, introduces him into the councils of Nations ; which suspends in him the dominion of the passions, only to give more energy to that of reason : the old age which seems to rank him among superior beings, from the multiplied hopes which the practice of virtue and the Laws of Providence have bestowed upon him, is of more value than all the other ages of life put together. I could wish it were so with the maturity of France, and that the age of *Louis XVI.* might surpass all that have preceded it

I would begin with disposing, in a central situation in Paris, a magnificent edifice, constructed internally in form of a circular amphitheatre, divided into ascending rows. The masters, to be entrusted with the charge of the national education, should be stationed below in the centre ; and above, I would have several rows of galleries, in order to multiply places for the auditors. On the outside, and quite round the building, I would have wide porticos, story above story, for the reception and accommodation of the People. On a pediment over the grand entrance these words might be inscribed :

NATIONAL SCHOOLS.

I have no need to mention, that as the children pass three years in each epoch of their education, one of these edifices would be requisite for the instruction of the generation of the year, which restricts to nine the number of monuments destined to the general education of the Capital.

Round each of these amphitheatres there should be a great park, stored with the plants and trees of the Country, scattered about without artificial arrangement, as in the fields and the woods. We should there behold the primrose and the violet shining around the root of the oak ; the apple and pear-tree blended with the elm and the beech. The bowers of innocence should be no less interesting than the tombs of virtue.

If I have expressed a wish to have monuments raised to the glory of those by whom our climate has been enriched with exotic plants, it is not that I prefer these to the plants of our own Country, but it is in the view of rendering to the memory of those citizens, a part of the gratitude which we owe to Nature. Besides, the most common plants in our plains, independent of their utility, are those which recal to us the most agreeable sensations: they do not transport us beyond seas as foreign plants do; but recal us home, and restore us to ourselves. The feathered sphere of the dandelion brings to my recollection the places where, seated on the grass with children of my own age, we endeavoured to sweep off by one whiff of breath, all it's plumage, without leaving a single tuft behind. Fortune in like manner has blown upon us, and has scattered abroad our downy-pinioned circles over the face of the whole earth. I call to remembrance, on seeing certain gramineous

plants in the ear, the happy age when we conjugated on their alternate ramifications, the different tenses and moods of the verb *aimer* (to love). We trembled at hearing our companions finish, after all the various inflexions, with *je ne vous aime plus* (I no longer love you). The finest flowers are not always those for which we conceive the highest affection. The moral sentiment determines at the long run all our physical tastes. The plants which seem to me the most unfortunate, are at this day those which awaken in me the most lively interest. I frequently fix my attention on a blade of grass, at the top of an old wall, or in a scabious tossed about by the winds in the middle of a plain. Oftener than once, at sight, in a foreign land, of an apple-tree without flowers, and without fruit, have I exclaimed: "Ah! why has Fortune denied to thee, as she has done to me, "a little earth in thy native land?"

The plants of our country recal the idea of it to us, wherever we may be, in a manner still more affecting than it's monuments. I would spare no cost therefore to collect them around the children of the Nation. I would make their school a spot charming as their tender age, that when the injustice of their patrons, of their friends, of their relations, of fortune, may have crushed to pieces in their hearts all the ties of Country, the place in which their childhood had enjoyed felicity might be still their Capitol.

I would decorate it with pictures. Children as well as the vulgar prefer painting to sculpture, because this last presents to them too many beauties of convention. They do not love figures completely white, but with ruddy cheeks and blue eyes, like their images in plaster. They are more struck with colours than with forms. I could wish to exhibit to them the portraits of our infant Kings. *Cyrus*, brought up with the children of his own age, formed them into heroes; ours should be educated at least with the images of our Sovereigns. They would assume, at sight of them, the first sentiments of the attachment which they owe to the Fathers of their Country.

I would present them with pictures after religious subjects; not such as are terrifying, and which are calculated to excite Man to repentance; but those which have a tendency to encourage innocence. Such would be that of the Virgin holding the infant *JESUS* in her arms. Such would be that of *JESUS* himself in the midst of children, displaying in their attitudes, and in

their features, the simplicity and the confidence of their age, and such as *Le Sueur* would have painted them. Beneath, there might be inscribed these words of JESUS CHRIST himself :

Sinite parvulos ad me venire.

Suffer little Children to come to Me.

Were it necessary to represent in this school any act of justice, there might be a painting of the fruitless fig-tree withering away at his command. It would exhibit the leaves of that tree curling up, it's branches twisting, it's back cracking, and the whole plant struck with terror, perishing under the malediction of the AUTHOR of Nature.

There might be inserted some simple and short inscription from the Gospel, such as this :

Love one another.

Or this :

Come unto Me, all ye that are heavy Laden, and I will give you Rest

And that maxim already necessary to the infant mind :

Virtue consists in preferring the public Good to our own.

And that other :

In order to be virtuous, a Man must resist his Propensities, his Inclinations, his Tastes, and maintain an incessant Conflict with Himself.

But there are inscriptions to which hardly any attention is paid, and the meaning of which is of much higher importance to children; these are their own names. Their names are inscriptions which they carry with them wherever they go. It is impossible to conceive the influence which they have upon their natural character. Our name is the first and the last possession which is at our disposal; it determines, from the days of infancy, our inclinations; it employs our attention through life, nay transports us beyond the grave. I have still a name left, is the reflection. It is a name that ennobles, or dishonours the earth. The rocks of Greece and of Italy, are neither more ancient, nor more beautiful than those of the other parts of the World; but we esteem them more, because they are dignified by more beautiful names. A medal is nothing but a bit of copper, frequently eaten with rust, but it acquires value from being decorated by an illustrious name.

I could wish therefore to have children distinguished by interesting names. A lad fathers himself upon his name. If it inclines toward any vice, or if it furnishes matter for ridicule, as many of ours do, his mind takes a bias from it. *Bayle* remarks, that a certain Inquisitor, named *TORRE-CREMADA*, or the Burnt-Tower, had in his life-time condemned I know not how many heretics to the flames. A Cordelier of the name of *FEU-ARDENT* (Ardent-Flame) is said to have done as much. There is a farther absurdity in giving to children, destined to peaceful occupations, turbulent and ambitious names, such as those of *Alexander* and *Cesar*. It is still more dangerous to give them ridiculous names. I have seen poor boys so tormented on this account by their companions, and even by their own parents, from the silly circumstance of a baptismal name, which implied some idea of simplicity and good-nature, that they insensibly acquired from it an opposite character of malignity and ferociousness. Instances of this are numerous. Two of our most satirical Writers, in Theology and Poesy, were named, the one *BLAISE Pascal*, and the other *COLIN Boileau*. *Colin* implies nothing sarcastic, said his father. That one word infused the spirit of sarcasm into him. The audacious villainy of *James CLEMENT*, took it's birth perhaps from some jest passed upon his name.

Government therefore ought to interpose in the business of giving names to children, as they have an influence so tremendous on the characters of the citizens. I could wish likewise that to their baptismal name might be added a surname of some family rendered illustrious by virtue, as the Romans did ; this species of adoption would attach the little to the great, and the great to the little. There were at Rome *Scipios* without number in Plebeian families. We might revive in like manner, among our commonalty, the names of our illustrious families, such as the *Fenelons*, the *Catinats*, the *Montausiers*, and the like.

I would not make use in this school of noisy bells, to announce the different exercises, but of the sound of flutes, of hautboys, and of bag-pipes. Every thing they learned should be versified and set to music. The influence of these two arts united is beyond all conception. I shall produce some examples of it, taken from the Legislation of a People whose police was the best perhaps in the World ; I mean that of Sparta. Hear what *Plutarch*

says on this subject, in his life of *Lycurgus*. "*Lycurgus*, then, "having taken leave of his Country," (to escape the calumnies which were the reward of his virtues) "directed his course first "towards Candia, where he studied the Cretan laws and govern- "ment, and made an acquaintance with the principal men of the "Country. Some of their laws he much approved, and resolved "to make use of them in his own Country: others he rejected. "Amongst the persons there, the most renowned for ability and "wisdom in political affairs, was *Thales*, whom *Lycurgus* by repeated importunities and assurances of friendship, at last persuaded to go over to Lacedemon. When he came thither, "though he professed only to be a lyric poet, in reality, he performed the part of the ablest legislator. The very songs which "he composed were pathetic exhortations to obedience and concord; and the sweetness of the music, and the cadence of the "verse, had so powerful and so pleasing an effect upon the hearers, that they were insensibly softened and civilized; and, at "last, renouncing their mutual feuds and animosities, united in "the love of humanity and good order. So that it may truly be "said, that *Thales* prepared the way for *Lycurgus*, by disposing "the People to receive his institutions."

Lycurgus farther introduced among them the use of music, in various species of exercise, and among others into the art of war.* "When their army was drawn up, and the enemy near, "the King sacrificed a goat, commanded the soldiers to set their "garlands upon their heads, and the musicians to play the tune "of the Hymn to *Castor*, and he himself advancing forward began the Pæan, which served for a signal to fall on. It was at "once a solemn and a terrible sight, to see them march on to "the combat cheerfully and sedately, without any disorder in "their ranks, or discomposure in their minds, measuring their "steps by the music of their flutes. Men in this temper were "not likely to be possessed with fear, or transported with fury; "but they proceeded with a deliberate valour and confidence of "success, as if some divinity had sensibly assisted them."

Thus, considering the difference of modern Nations, music would serve to repress their courage, rather than to excite it; and they had no occasion, for that purpose, of bears-skin caps, nor of brandy, nor of drums.

* *Plutarch's Life of Lycurgus.*

If music and poetry had so much power at Sparta, to recal corrupted men to the practice of virtue, and afterwards to govern them; What influence would they not have over our children in the age of innocence? Who could ever forget the sacred Laws of Morality, were they set to music, and in verses as enchanting as those of the *Devin du Village*? From similar institutions there might be produced among us Poets as sublime as the sage *Thales*, or as *Tyrtæus* who composed the Hymn of *Castor*.

These arrangements being made for our children, the first branch of their education should be Religion. I would begin with talking to them about GOD, in the view of engaging them to fear and love Him, but to fear Him, without making Him an object of terror to them. Terrifying views of GOD generate superstition, and inspire horrible apprehensions of priests and of death. The first precept of Religion is to love GOD. *Love, and do what you will*, was the saying of a Saint. We are enjoined by Religion to love Him above all things. We are encouraged to address ourselves to Him as to a Father. If we are commanded to fear Him, it is only with a relation to the love which we owe him; because we ought to be afraid of offending the person whom we are bound to love. Besides, I am very far from thinking that a child is incapable of having any idea of GOD before fourteen years of age, as has been advanced by a Writer whom in other respects I love. Do we not convey to the youngest children sentiments of fear and of aversion, for metaphysical objects which have no existence? Wherefore should they not be inspired with confidence and love for the Being who fills universal Nature with his beneficence? Children have not the ideas of GOD such as are taught by systems of Theology and Philosophy; but they are perfectly capable of having the sentiment of him which, as we have seen, is the reason of Nature. This very sentiment has been exalted among them, during the time of the Crusades, to such a height of fervor, as to induce multitudes of them to assume the Cross for the conquest of the Holy Land. Would to God I had preserved the sentiment of the existence of the Supreme Being, and of his principal attributes, as pure as I had it in my earliest years! It is the heart, still more than the understanding, that Religion demands. And which heart, I beseech you, is most filled with the DEITY, and the most agreeable in his sight;

that of the child who, elevated with the sentiment of Him, raises his innocent hands to Heaven as he stammers out his prayer, or of the schoolman who pretends to explain His Nature?

It is very easy to communicate to children ideas of GOD and of virtue. The daisies springing up among the grass, the fruits suspended on the trees of their enclosure, should be their first lessons in Theology, and their first exercises of abstinence and of obedience to the Laws. Their minds might be fixed on the principal object of Religion, by the pure and simple recitation of the life of JESUS CHRIST in the Gospel. They would learn in their Creed all that they can know of the nature of GOD, and in the *Pater-noster* every thing that they can ask of Him.

It is worthy of remark, that of all the Sacred Books there is no one which children take in with so much facility as the Gospel. It would be proper to habituate them betimes, in a particular manner, to perform the actions which are there enjoined, without vain-glory, and without any respect to human observation or applause. They ought to be trained up therefore in the habit of preventing each other in acts of friendship, in mutual deference, and in good offices of every kind.

All the children of citizens should be admitted into this National School, without making a single exception. I would insist only on the most perfect cleanliness, were they in other respects dressed but in patches sewed together. There you might see the child of a man of quality attended by his governor, arrive in an equipage, and take his place by the side of a peasant's child leaning on his little stick, dressed in canvass in the very middle of winter, and carrying in a satchel his little books, and his slice of brown bread for the provision of the whole day. Thus they would both learn to know each other before they came to be separated for ever. The child of the rich man would be instructed to impart of his superfluity, to him who is frequently destined to support the affluent out of his own necessary pittance. These children of all ranks, crowned with flowers, and distributed into choirs, would assist in our public processions. Their age, their order, their songs, and their innocence, would present in these, a spectacle more august than the lackeys of the Great bearing the coats of arms of their masters pasted to wax-tapers, and beyond all contradiction much more affect-

ing than the hedges of soldiers and bayonets with which, on such occasions, a God of Peace is encompassed.

In this school, children might be taught to read and to cypher. Ingenious men have for this effect contrived boards, and methods simple, prompt and agreeable ; but schoolmasters have been at great pains to render them useless, because they destroyed their empire, and made education proceed faster than was consistent with their emolument. If you wish children to learn quickly to read, put a sugar-plumb over each of their letters ; they will soon have their alphabet by heart ; and if you multiply or diminish the number of them, they will soon become arithmeticians. However that may be, they shall have profited wonderfully in this school of their country, should they leave it without having learned to read, write and cypher ; but deeply penetrated with this one truth, that to read, write and cypher, and all the Sciences in the World, are mere nothings ; but that to be sincere, good, obliging ; to love GOD and Man, is the only Science worthy of the human heart.

At the second era of education, which I suppose to be about the age of from ten to twelve, when their intellectual powers restlessly stir and press forward to the imitation of every thing that they see done by others, I would have them instructed in the means which men employ in making provision for the wants of Society. I would not pretend to teach them the five hundred and thirty arts and handicrafts which are carried on at Paris, but those only which are subservient to the first necessities of human life, such as agriculture, the different processes employed in making bread, the arts which, in the pride of our hearts, we denominate mechanical, such as those of spinning flax and hemp, of weaving these into cloth, and that of building houses. To these I would join the elements of the natural Sciences, in which those various handicrafts originated, the elements of Geometry, and the experiments of Natural Philosophy, which have invented nothing in this respect, but which explain their processes with much pomp and parade.

I would likewise have them made acquainted with the liberal arts, such as those of drawing, of architecture, of fortification, not in the view of making painters of them, or architects, or engineers, but to shew them in what manner their habitation is constructed, and how their Country is defended. I would

make them observe, as an antidote to the vanity which the Sciences inspire, that Man, amidst such a variety of arts and operations, has imagined no one thing; that he has imitated in all his productions, either the skill of the animal creation, or the operations of Nature; that his industry is a testimony of the misery to which he is condemned, whereby he is laid under the necessity of maintaining an incessant conflict against the elements, against hunger and thirst, against his fellow-men, and what is most difficult of all, against himself. I would make them sensible of these relations of the truths of Religion, to those of Nature; and I would thus dispose them to love the class of useful men who are continually providing for their wants.

I would always endeavour, in the course of this education, to make the exercises of the body go hand in hand with those of the mind. Accordingly, while they were acquiring the knowledge of the useful arts I would have them taught Latin. I would not teach it them metaphysically and grammatically, as in our colleges, and which is forgotten much faster than it was attained, but they should learn it practically. Thus it is that the Polish peasantry acquire it, who speak it fluently all their lifetime, though they have never been at college. They speak it in a very intelligible manner, as I know by experience, having travelled through their Country. The use of that language has been, I imagine, propagated among them by certain exiles from ancient Rome, perhaps *Ovid*, who was sent into banishment among the Samatians, their Ancestors, and for the memory of which Poet they still preserve the highest veneration. It is not, say our *Literati*, the Latin of *Cicero*. But what is that to the purpose? It is not because those peasants have not a competent knowledge of the Latin tongue, that they are incapable of speaking the language of *Cicero*; but because, being slaves, they do not understand the language of liberty. Our French peasants would not comprehend the best translations which could be made of that Author, were they the production even of the University. But a Savage of Canada would take them in perfectly, and better than many Professors of eloquence. It is the tone of soul of the person who listens which gives the comprehension of the language of him who speaks. A project was once formed, I think under *Louis XIV.* of building a city in which no language but Latin was to have been spoken. This must have inconceivably

facilitated the study of that tongue ; but the University undoubtedly would not have found it's account in it. Whatever may be in this, I am well assured that two years at most are sufficient for the children of the National School to learn the Latin by practise, especially if in the lectures which they attended, extracts were given from the lives of great men, French and Roman, written in good Latin, and afterwards explained.

In the third period of education, nearly about the age when the passions begin to take flight, I would shew to ingenious youth, the pure and gentle language of them, in the Eclogues and Georgics of *Virgil*; the philosophy of them, in some of the Odes of *Horace*; and pictures of their corruption taken from *Tacitus* and *Suetonius*.* I would finish the painting of the hideous excesses into which they plunge Mankind, by exhibiting passages from some Historian of the Lower Empire. I would make them remark how talents, taste, knowledge and eloquence, sunk at once among the Ancients, together with manners and virtue.

I would be very careful not to fatigue my pupils with reading of this sort ; I would point out to them only the more poignant passages, in order to excite in them a desire to know the rest. My aim should be not to lead them through a course of *Virgil*, of *Horace*, and of *Tacitus*, but a real course of classical learning, by uniting in their studies whatever men of genius have considered as best adapted to the perfecting of human nature.

I would likewise have them practically instructed in the knowledge of the Greek tongue, which is on the point of going into total disuse among us. I would make them acquainted with *Homer*, *principium sapientiæ & fons*, (the original source of Wisdom) as *Horace* with perfect propriety calls him ; with *Herodotus*, the father of History ; with some maxims from the sublime book of *Marcus Aurelius*.† I would endeavour to make

* I wish not to see the work of *Suetonius* read in our schools : without being a masterly performance, it exhibits the most shocking picture of the most hideous vices of the Romans, and especially of their Emperors. I can never forget the observation of the late learned Dr. Nisbitt, president of the College of Carlisle, in Pennsylvania, when I expressed my surprize, that *Suetonius* should be permitted to be read in the American schools. "It is true," said the Principal, "the work does paint the *gigantic*" vices of the Romans.—B. S. B.

† Why only *some* of the maxims of this great and good man ? Neither the Greeks nor the Romans have transmitted to us any other work so pregnant

them sensible how at all times talents, virtues, great men, and States, flourished together with confidence in the Divine Providence. But, in order to communicate greater weight to these eternal truths, I would intermingle with them the enchanting studies of Nature, of which they had hitherto seen only some faint sketches in the greatest Writers.

I would make them remark the disposition of this Globe, suspended in a most incomprehensible manner upon nothing, with an infinite number of different Nations in motion over it's solid and over it's liquid surface. I would point out to them, in each climate, the principal plants which are useful to human life; the animals which stand related to those plants, and to their soil, without extending farther. I would then shew them the human race, who alone of all sensible beings are universally dispersed, mutually to assist each other, and to gather at once all the productions of Nature. I would let them see that the interests of Princes are not different from those of other men; and that those of every Nation are the same with the interests of their Princes. I would speak of the different Laws by which the Nations are governed; I would lead them to an acquaintance with those of their own Country, of which most of our citizens are entirely ignorant. I would give them an idea of the principal religions which divide the Earth; and I would demonstrate to them, how highly preferable Christianity is to all the political Laws, and to all the religions of the World, because it alone aims at the felicity of the whole human race. I would make them sensible, that it is the Christian Religion which prevents the different ranks of Society from dashing themselves to pieces by mutual collision, and which gives them equal powers of bearing up under the pressure of unequal weights. From these sublime considerations, the love of their Country would be kindled in those youthful hearts, and would acquire increasing ardour from the spectacle of her very calamities.

I would intermix these affecting speculations with exercises, useful, agreeable, and adapted to the vivacity of their time of life. I would have them taught to swim, not so much by way

with sublime lessons, so eminently calculated to reconcile us to the seeming evils of this life, as the *Meditations* of Aurelius. Why has not this work been reprinted in the United States? Though frequently translated into English, it is too little known among us.—B S B.

of security from danger in the event of suffering shipwreck, as in the view of assisting persons who may happen to be in that dreadful situation. Whatever particular advantage they might derive from their studies, I would never propose to them any other end but the good of their fellow-creatures. They would make a most wonderful progress in these, did they reap no other fruit except that of concord, and the love of Country.

In the beautiful season of the year, when the corn is reaped, about the beginning of September, I would lead them out into the country, embodied under various standards. I would present them with the image of war. I would make them lie on the grass under the shade of forests: there they should themselves prepare their own victuals; they should learn to attack and to defend a post, to cross a river by swimming; they should learn the use of fire-arms, and at the same time to practise the evolutions borrowed from the tactics of the Greeks, who are our masters in every branch of knowledge. I would bring into disrepute, by means of these military exercises, the taste for fencing, which renders the soldiery formidable only to citizens, an art useless and even hurtful in war, reprobated by all great Commanders, and derogatory to courage, as *Philopamen* alleged. "In my younger days," says *Michael Montaigne*, "the nobility disclaimed the praise of being skilful fencers as injurious to their character, and learned that art by stealth, as a matter of trick, inconsistent with real native valour."* This art generated in the same society of the hatred of the lower classes to the higher, who oppress them, is an importation from Italy, where the military art exists no longer. It is this which keeps up the spirit of duelling among us. We have not derived that spirit from the Nations of the North, as so many Writers have taken upon them to assert. Duels are hardly known in Russia and in Prussia; and altogether unknown to the Savages of the North. Italy is their native soil, as may be gathered from the most celebrated treatises on fencing, and from the terms of that art, which are Italian, as *tierce*, *quarte*. It has been naturalized among us through the weakness and corruption of many women, who are far from being displeased with having a bully for a lover. To those moral causes no doubt we must ascribe that strange contradiction in our government, which prohibits duel

* *Essays of Michael Montaigne* Book ii. chap. 27

ling, and at the same time permits the public exercise of an art, which pretends to teach nothing else but how to fight duels.* The pupils trained in the National Schools should be taught to entertain a very different idea of courage; and in the course of their studies, they should perform a course of human life, in which they should be instructed in what manner they ought one day to demean themselves toward a fellow-citizen, and toward an enemy.

The season of youth would glide away agreeably and usefully amidst such a number of employments. The mind and the body would expand at one and the same time. The natural talents, frequently unknown in most men, would manifest themselves at sight of the different objects which might be presented to them. More than one *Achilles* would feel his blood all on fire on beholding a sword: more than one *Vaucanson*, at the aspect of a piece of machinery, would begin to meditate on the means of organizing wood or brass.

The attainment of all this various knowledge, I shall be told, will require a very considerable quantity of time: but if we take into consideration that which is squandered away in our colleges, in the tiresome repetitions of lessons, in the grammatical decompositions and explications of the Latin tongue, which do not communicate to the scholar so much as facility in speaking it, and in the dangerous competitions of a vain ambition, it is impossible not to admit that we have been proposing to make a much better use of it. The scholars every day scribble over in them as much paper as so many attorneys,† so much the

* Fencing-masters tell us that their art expands the body, and teaches to walk gracefully. Dancing-masters say the same thing of theirs. As a proof that they are mistaken, both these classes of gentlemen are readily distinguished by their affected manner of walking. A citizen ought neither to have the attitude nor the movements of a gladiator. But if the art of fencing be necessary, duelling ought to be permitted by public authority, in order to relieve persons of character from the cruel alternative of equally dishonouring themselves, by violating the Laws of the State, and of Religion, or by observing them. In truth, worthless people are among us very much at their ease.

† I am persuaded that if this plan of education, indigested as it is, were to be adopted, one of the greatest obstacles to the universal renovation of our knowledge and morals would be, not Regents, not academical Institutions, not University Privileges, not the square caps of Doctors. It would come from

more unprofitable that, thanks to the printing of the books, the versions, or themes, of which they copy, they have no occasion for all this irksome labour. But on what should the Regents themselves employ their own time if the pupils did not waste theirs?

In the National Schools every thing would go on after the academic manner of the Greek Philosophers. The pupils should there pursue their studies, sometimes seated, sometimes standing; sometimes in the fields, at other times in the amphitheatre, or in the park which surrounded it. There would be no occasion for either pen, or paper, or ink; every one would bring with him only the classical book which might contain the subject of the lesson. I have had frequent experience that we forget what we commit to writing. That which I have conveyed to paper I discharge from my memory, and very soon from my recollective faculty. I have become sensible of this with respect to complete Works which I had fairly transcribed, and which appeared to me afterward as strange as if they had been the production of a different hand from my own. This does not take place with regard to the impressions which the conversation of another leaves upon our mind, especially if it be accompanied with striking circumstances. The tone of voice, the gesture, the respect due to the orator, the reflections of the company, concur in engraving on the memory the words of a discourse much better than writing does. I shall again quote to this purpose the authority of *Plutarch*, or rather that of *Lycurgus*.

“ But it is carefully to be remarked, that *Lycurgus* would
 “ never permit any one of his Laws to be committed to writing;
 “ ing; it is accordingly expressly enjoined by one of the special
 “ statutes, that none of his institutes shall be copied; because
 “ whatever is of peculiar force and efficacy toward rendering
 “ a city happy and virtuous, it was his opinion, ought to
 “ be impressed by habitual culture on the hearts and manners
 “ of men, in order to make the characters indelible. Good-
 “ will is more powerful than any other mode of constraint to

the Paper merchants, one of whose principal branches of commerce would thereby be reduced to almost nothing. There might be devised happy and glorious compensations for the privileges of the Masters; but a money objection, in this venal age, seems to me absolutely unanswerable.

“ which men can be subjected, for by means of it every one becomes a Law unto himself.”*

The heads of our young people should not then be oppressed, in the National Schools, with unprofitable and prattling Science. Sometimes they should defend among themselves the cause of a citizen; sometimes they should deliver their opinion respecting a public event. They should pursue the process of an art through it's whole course. Their eloquence would be a real eloquence, and their knowledge real knowledge. They should employ their minds on no abstruse Science, in no useless research, which are usually the fruit of pride. In the studies which I propose, every thing should bring us back to Society, to Concord, to Religion, and to Nature.

I have no need to suggest, that these several Schools should be decorated correspondently to their use, and that the exterior of them all should serve as walking places and asylums to the People, especially during the tedious and gloomy days of Winter. There they should every day behold spectacles more proper to inspire them with virtuous sentiments, and with the love of their country, I do not say than those of the Boulevards, or than the dances of Vauxhall, but even than the tragedies of *Corneille*.

There should be among those young people no such thing as reward, nor punishment, nor emulation, and consequently no envy. The only punishment there inflicted should be, to banish from the assembly the person who should disturb it, and even that only for a time proportioned to the fault of the offender: and withal this should rather be an act of justice than a punishment; for I would have no manner of shame to attach to that exile. But if you wish to form an idea of such an assembly, conceive, instead of our young collegians, pale, pensive, jealous, trembling about the fate of their unfortunate compositions, a multitude of young persons gay, content, attracted by pleasure to vast circular halls, in which are erected here and there the statues of the illustrious men of Antiquity, and of their own Country: behold them all attentive to the master's lessons, assisting each other in comprehending them, in retaining them, and in replying to his unexpected questions. One tacitly sug-

gests an answer to his neighbour : another makes an excuse for the negligence of his absent comrade.

Represent to yourself the rapid progress of studies elucidated by intelligent masters, and drunk in by pupils who are mutually assisting each other in fixing the impression of them. Figure to yourself Science spreading among them, as the flame in a pile, all the pieces of which are nicely adjusted, communicates from one to another, till the whole becomes one blaze. Observe among them, instead of a vain emulation, union, benevolence, friendship, for an answer seasonably suggested, for an apology made in behalf of one absent by his comrades, and other little services rendered and repaid. The recollection of those early intimacies will farther unite them in the World, notwithstanding the prejudices of their various conditions.

At this tender age it is that gratitude and resentment become engraved, for the rest of life, as indelibly as the elements of Science and of Religion. It is not so in our colleges, where every scholar attempts to supplant his neighbour. I recollect that one exercise day I found myself very much embarrassed, from having forgotten a Latin Author out of which I had a page to translate. One of my neighbours obligingly offered to dictate to me the version which he had made from it. I accepted his services with many expressions of acknowledgment. I accordingly copied his version, only changing a few words, that the Regent might not perceive it to be the same with my companion's ; but that which he had given me was only a false copy of his own, and was filled with blunders so extravagant that the Regent was astonished at it, and could not believe it at first to be my production, for I was a tolerably good scholar. I have not lost the recollection of that act of perfidy, though in truth I have forgotten others much more cruel which I have encountered since that period ; but the first age of human life is the season of resentments, and of grateful feelings, which are never to be effaced.

I recollect periods of time still more remote. When I went to school in frocks, I sometimes lost my books through heedlessness. I had a nurse named *Mary Talbot*, who bought me others with her own money, for fear of my being whipped at school. And of a truth the recollection of those petty services has remained so long, and so deeply imprinted on my

heart, that I can truly affirm no person in the World, my mother excepted, possessed my affection so uniformly, and so constantly. That good and poor creature frequently took a cordial interest in my useless projects for acquiring a fortune. I reckoned on repaying her with usury in her old age, when she was in a manner destitute, the tender care which she took of my infancy; but scarcely has it been in my power to give her some trifling and inadequate tokens of my good-will. I relate these recollections, traces of which every one of my Readers probably possesses somewhat similar, and still more interesting, relating to himself and to his own childhood, to prove to what a degree the early season of life would be naturally the era of virtue and of gratitude, were it not frequently depraved among us, through the faultiness of our institutions.

But before we could pretend to establish those National Schools, we must have men formed to preside in them. I would not have them chosen from among those who are most powerfully recommended. The more recommendations they might have the more would they be given to intrigue, and consequently the less would be their virtue. The enquiry made concerning them ought not to be, Is he a wit, a bright man, a Philosopher? But, is he fond of children? Does he frequent the unfortunate rather than the great? Is he a man of sensibility? Does he possess virtue? With persons of such a character, we should be furnished with masters proper for conducting the public education. Besides, I could wish to change the appellation of Master and Doctor, as harsh and lofty. I would have their titles to import the friends of childhood, the fathers of the Country; and these I would have expressed by beautiful Greek names, in order to unite to the respect due to their functions the mysteriousness of their titles. Their condition, as being destined to form citizens for the Nation, should be at least as noble, and as distinguished, as that of the Squires who manage horses in the Courts of Princes. A titled magistrate should preside every day in each school. It would be very becoming, that the magistrates should cause to be trained up, under their own eyes, to justice, and to the Laws, the children whom they are one day to judge and to govern as men. Children likewise are citizens in miniature. A nobleman of the highest rank, and of the most eminent accomplishments, should have

the general superintendence of these National Schools, more important beyond all contradiction than that of the studs of the kingdom ; and to the end that men of letters, given to low flattery, might not be tempted to insert in the public papers the days on which he was to *vouchsafe* to make his visits to them, this sublime duty should have no revenue annexed to it, and the only honour that could possibly be claimed should be that of presiding.

Would to God it were in my power to conciliate the education of women to that of men, as at Sparta ! But our manners forbid it. I do not believe however that there could be any great inconveniency in associating, in early life, the children of both sexes. Their society communicates mutual grace ; besides, the first elements of civil life, of religion, and of virtue, are the same for the one and for the other. This first epoch excepted, young women should learn nothing of what men ought to know ; not that they are to remain always in ignorance of it, but that they may receive instruction with increased pleasure, and one day find teachers in their lovers. There is this moral difference between man and woman, that the man owes himself to his country, and the woman is devoted to the felicity of one man alone. A young woman will never attain this end but by acquiring a relish for the employments suitable to her sex. To no purpose would you give her a complete course of the Sciences, and make her a Theologian or a Philosopher : a husband does not love to find either a rival or an instructor in his wife. Books and masters, with us, blight betimes in a young female, virgin ignorance, that flower of the soul, which a lover takes such delight in gathering. They rob a husband of the most delicious charm of their union, of those inter-communications of amorous science, and native ignorance, so proper for filling up the long days of married life. They destroy those contrasts of character which Nature has established between the two sexes, in order to produce the most lovely of harmonies.

These natural contrasts are so necessary to love, that there is not a single female celebrated for the attachment with which she inspired her lovers, or her husband, who has been indebted for her empire to any other attractions than the amusements or the occupations peculiar to her sex, from the age of *Penelope* down to the present. We have them of all ranks, and of all characters,

but not one of them learned. Such of them as have merited this description, have likewise been almost all of them unfortunate in love, from *Sappho* down to *Christina* Queen of Sweden,* and even still nearer to us. It should be then by the side of her mother, of her father, of her brothers and sisters, that a young woman ought to derive instruction respecting her future duties of mother and wife. In her father's house it is that she ought to learn a multitude of domestic arts, at this day unknown to our highly bred dames.

I have oftener than once, in the course of this Work, spoken in high terms of the felicity enjoyed in Holland ; however, as I only passed through that country, I have but a slight acquaintance with their domestic manners. This much nevertheless I know, that the women there are constantly employed in household affairs, and that the most undisturbed concord reign in families. But I enjoyed at Berlin an image of the charms which those manners held in such contempt among us, are capable of diffusing over domestic life. A friend whom Providence raised up for me in that city, where I was an entire stranger, introduced me to a society of young ladies ; for in Prussia these assemblies are held not in the apartments of the married women, but of their daughters. This custom is kept up in all the families which have not been corrupted by the manners of our French officers, who were prisoners there in the last war. It is customary then for the young ladies of the same society to invite each other by turns, to assemblies which they call coffee parties. They are generally kept on Thursdays. They go, accompanied by their mothers, to the apartments of her who has given the invitation. She treats them with creamed coffee, and every kind of pastry and comfits prepared by her own hand. She presents them, in the very depth of Winter, with fruits of all sorts preserved in sugar, in colours, in verdure, and in perfume, apparently as fresh as if they were hanging on the tree. She receives from her companions thousands of compliments, which she repays with interest.

* I am surprized that our virtuous author could mention the name of this woman, without attaching to it some epithet that might serve to show his abhorrence of her character. The murder of the poor Marquis of Monaldeschi, by her orders, and even in her presence, to say nothing of her amours, places Christina, in my opinion, in the catalogue of the most infamous women of the seventeenth century --B. S. B.

But by and by she displays other talents. Sometimes she un-rolls a large piece of tapestry, on which she had been labouring night and day, and exhibits forests of willows always green which she herself has planted, and rivulets of mohair which she has set a-flowing with her needle. At other times, she weds her voice to the sounds of a harpsichord, and seems to have collected into her chamber all the songsters of the grove. She requests her companions to sing in their turn. Then it is you hear elogium upon elogium. The mothers enraptured with delight applaud themselves in secret, like *Niobe* on the praises given to their daughters: *Pertentant gaudia pectus*: (the bosom glows with joy.) Some officers booted, and in their uniform, having slipped away by stealth from the exercises of the parade, step in to enjoy amidst this lovely circle some moments of delightful tranquillity; and while each of the young females hopes to find in one of them her protector and her friend, each of the men sighs after the partner who is one day to soothe, by the charm of domestic talents, the rigour of military labours. I never saw any country in which the youth of both sexes discovered greater purity of manners, and in which marriages were more happy.

There is no occasion however to have recourse to strangers, for proofs of the power of love over sanctity of manners. I ascribe the innocence of those of our own peasantry, and their fidelity in wedlock, to their being able very early in life to give themselves up to this honourable sentiment. It is love which renders them content with their painful lot: it even suspends the miseries of slavery. I have frequently seen in the Isle of France black people, after being exhausted by the fatigues of the day, set off as the night approached to visit their mistresses, at the distance of three or four leagues.* They keep their assignments in the midst of the woods, at the foot of a rock, where they kindle a fire: they dance together a great part of the night to the sound of their *tamtam*, and return to their labour before day-break contented, full of vigour, and as fresh as those who have slept soundly all night long: such is the power possessed by the moral affections which combine with this sentiment, over

* Not unlike this, is the ardent zeal of the Negro slaves, in the southern states, of America.—But some of our philosophers would wish us to believe, that the breast of the Negro is a stranger to the sentiment of delicate love.

the physical organization. The night of the lover diffuses a charm over the day of the slave.

We have in Scripture a very remarkable instance to this effect; it is in the book of Genesis; "*Jacob*," it is there written, "served seven years for *Rachel*; and they seemed unto him but "a few days, for the love he had to her."* I am perfectly aware that our politicians, who set no value on any thing but gold and titles, have no conception of all this; but I am happy in being able to inform them, that no one ever better understood the Laws of Nature than the Authors of the Sacred Books, and that on the Laws of Nature only, can those of happily ordered Societies be established.

I could wish therefore that our young people might have it in their power to cultivate the sentiment of love, in the midst of their labours, as *Jacob* did. No matter at what age; as soon as we are capable of feeling, we are capable of loving. Honourable love suspends pain, banishes languor, saves from prostitution, from the errors and the restlessness of celibacy: it fills life with a thousand delicious perspectives, by displaying in futurity the most desirable of unions: it augments, in the hearts of two youthful lovers, a relish for study, and a taste for domestic employments. What pleasure must it afford a young man, transported with the science which he has derived from his masters, to repeat the lessons of it to the fair one whom he loves! What delight to a young and timid female to see herself distinguished amidst her companions, and to hear the value and the graces, of her little skill and industry, exalted by the tongue of her lover!

A young man, destined one day to repress on the tribunal the injustice of men, is enchanted, amidst the labyrinths of Law, to behold his mistress embroidering for him the flowers which are to decorate the asylum of their union, and to present him with an image of the beauties of Nature, of which the gloomy honours of his station are going to deprive him for life. Another, devoted to conduct the flame of war to the ends of the Earth, attaches himself to the gentle spirit of his female friend, and flatters himself with the thought that the mischief which he may do to mankind, shall be repaired by the blessings which she be-

* Genesis, chap. xxix ver 20

stows on the miserable. Friendships multiply in families; of the friend to the brother who introduces him, and of the brother to the sister. The kindred are mutually attracted. The young folks form their manners; and the happy perspectives which their union discloses, cherish in them the love of their several duties, and of virtue. Who knows but those unconstrained choices, those pure and tender ties, may fix that roving spirit which some have supposed natural to women? They would respect the bands which they themselves had formed. If, having become wives, they aim at pleasing every body, it is perhaps because when they were single, they were not permitted to be in love with one.

If there is room to hope for a happy revolution in our Country, it is to be effected only by calling back the women to domestic manners. Whatever satire may have been levelled against them, they are less culpable than the men. They are chargeable with hardly any vices except those which they receive from us: and we have a great many from which they are free. As to those which are peculiar to themselves it may be affirmed, that they have retarded our ruin, by balancing the vices of our political constitution. It is impossible to imagine what must have become of a state of Society abandoned to all the absurdities of our education, to all the prejudices of our various conditions, and to the ambitions of each contending party, had not the women crossed us upon the road. Our History presents only the disputes of monks with monks, of doctors with doctors, of grantees with grantees, of nobles with the base-born; while crafty politicians gradually lay hold of all our professions. But for the women all these parties would have made a desert of the State. and have led the commonalty to the very last man to the slaughter, or to market, a piece of advice which was actually given not many years ago. Ages have elapsed in which we should all have been Cordeliers, born and dying encircled with the chord of *St. Francis*; in others, all would have taken to the road in the character of knights-errant, rambling over hill and dale with lance in hand; in others, all penitents, parading through the streets of our cities in solemn processions, and whipping ourselves to some purpose; in others, *quisquis* or *quamquam* of the University.

The women, thrown out of their natural state by our unjust manners, turn every thing upside down, laugh at every thing, destroy every thing, the great fortunes, the pretensions of pride, and the prejudices of opinion. Women have only one passion, which is love, and this passion has only one object; whereas men refer every thing to ambition, which has thousands. Whatever be the irregularities of women, they are always nearer to nature than we are, because their ruling passion is incessantly impelling them in that direction, whereas ours on the contrary is betraying us into endless deviations. A Provincial, and even a Parisian tradesman, hardly behaves with kindness to his children when they are somewhat grown up; but he bends with profound reverence before those of strangers, provided they are rich or of high quality: his wife on the contrary is regulated in her behaviour to them by their figure. If they are homely she neglects them; but she will caress a peasant's child if it is beautiful; she will pay more respect to a low-born man with grey-hairs and a venerable head, than to a counsellor without a beard. Women attend only to the advantages which are the gift of Nature, and men only to those of fortune. Thus the women amidst all their irregularities still bring us back to Nature, while we, with our affectation of superior wisdom, are in a constant tendency to deviation from her.

I admit at the same time that they have prevented the general calamity only by introducing among us an infinite number of particular evils. Alas! as well as ourselves they never will find happiness except in the practice of virtue. In all countries where the empire of virtue is at an end, they are most miserable. They were formerly exceedingly happy in the virtuous Republics of Greece and of Italy; there they decided the fate of States: at this day, reduced to the condition of slaves in those very countries, the greatest part of them are under the necessity of submitting to prostitution for the sake of a livelihood. Ours ought not to despair of us. They possess over man an empire absolutely inalienable;* we know them only under the appella-

* It deserves to be remarked, that most of the names of the objects of Nature, of morals, and of metaphysics, are feminine, especially in the French language. It would afford matter of curious research, to enquire, whether masculine names have been given by the women, and feminine names by the

tion of the sex, to which we have given the epithet of fair by way of excellence. But how many other descriptive epithets, still more interesting, might be added to this, such as those of nutritive, consolatory ! They receive us on our entrance into life, and they close our eyes when we die. It is not to beauty, but to Religion, that our women are indebted for the greatest part of their influence ; the same Frenchman who in Paris sighs at the feet of his mistress, holds her in fetters, and under the discipline of the whip, in St. Domingo. Our religion alone of all contemplates the conjugal union in the order of Nature : it is the only Religion on the face of the Earth which presents women to man as a companion ; every other abandons her to him as a slave. To Religion alone do our women owe the liberty which they enjoy in Europe ; and from the liberty of the women it is that the liberty of Nations has flowed, accompanied with the proscription of a multitude of inhuman usages, which have been diffused over all the other parts of the World, such as slavery, seraglios, and eunuchs. O charming sex ! it is in your virtue that your power consists.—Save your Country, by recalling to the love of domestic manners your lovers and your husbands, from a display of your gentle occupations : You would restore Society at large to a sense of duty, if each of you brings back one single man to the order of Nature. Envy not the other sex their authority, their magistracies, their talents, their vain-glory ; but in the midst of your weakness, surrounded with your wools and your silks, give thanks to the AUTHOR of Nature for having conferred on you alone the power of being always good and beneficent.

men, to objects which are most particularly subservient to the uses of each sex ; or whether the first have been made of the masculine gender, because they presented characters of energy and force, and the second of the feminine gender, because they display characters of grace and loveliness. I am persuaded, that the men having given names to the objects of nature, in general, have lavished feminine designations upon them, from that secret propensity which attracts them toward the sex : this observation is supported by the names assigned to the Heavenly Constellations, to the four quarters of the Globe, to by far the greatest part of rivers, kingdoms, fruits, trees, virtues, and so on.

RECAPITULATION.

I HAVE presented, from the beginning of this Work, the different paths of Nature which I proposed to pursue, on purpose to form to myself an idea of the order which governs the World. I brought forward, in the first place, the objections which have in all ages been raised against a Providence; I have exhibited them as applied to the several kingdoms of Nature, one after another; which furnished me with an opportunity, in refuting them, of displaying views entirely new respecting the disposition, and the use, of the different parts of this Globe: I have accordingly referred the direction of the chains of Mountains on the Continents, to the regular winds which blow over the Ocean; the position of Islands, to the confluence of it's Currents, or those of Rivers; the constant supply of fuel to Volcanos, to the bituminous deposits on it's shores; the Currents of the Sea, and the movements of the Tides, to the alternate effusions of the Polar Ices.

In the next place, I have refuted, in order, the other objections raised on the subject of the vegetable and animal kingdoms, by demonstrating, that these kingdoms were no more governed by mechanical Laws than the fossil kingdom is. I have farther demonstrated, that the greatest part of the ills which oppress the human race are to be ascribed to the defects of our political institutions, and not to those of Nature; that Man is the only being who is abandoned to his own providence, as a punishment for some original transgression; but that the same DEITY who had given him up to the direction of his own intelligence, still watched over his destination; that he caused to recoil on the Governors of the Nations the miseries with which they overwhelm the little and the weak; and I have demonstrated the action of a Divine Providence from the very calamities of the Human Race. Such is the subject of my first Part.

In the opening of my second, I have attacked the principles of our Sciences, by evincing that they mislead us, either by the boldness of those same principles, from whence they would soar

up to the nature of the elements which elude their grasp, or by the insufficiency of their methods, which is capable of catching only one Law of Nature at once, because of the weakness of our understanding and of the vanity inspired by our education, whereby we are betrayed into the belief that the little paths in which we tread are the only roads leading to knowledge. Thus it is that the natural Sciences, and even the political which are results from them, having been with us separated from each other, each one in particular has formed, if I may use the expression, a lane without a thorough fare, of the road by which it entered. Thus it is that the physical causes have, at the long run, made us lose sight of intellectual ends in the order of Nature, as financial causes have stripped us of the hopes of Religion and of Virtue, in the social order.

I afterwards set out in quest of a faculty better adapted to the discovery of truth than our reason, which after all is nothing but our personal interest merely. I flatter myself I have found it in that sublime instinct called *sentiment*, which is in us the expression of Natural Laws, and which is invariable among all Nations. By means of it I have observed the Laws of Nature, not by tracing them up to their principles, which are known to GOD only, but by descending into their results, which are destined to the use of Man. I have had the felicity, in pursuance of this track, to perceive certain principles of the correspondencies and of the harmonies which govern the World.

I cannot entertain a shadow of doubt, that it was by proceeding in this same track, the ancient Egyptians distinguished themselves so highly for their attainments in natural knowledge, which they carried incomparably farther than we have done. They studied Nature in Nature herself, and not by peacemeal, and with machines. Hence they formed a most wonderful Science, of just celebrity all over the Globe, under the name of Magic. The elements of this Science are now unknown: the name of it alone is all that remains, and is at this day given to operations the most stupid in which the error and depravity of the human heart can be employed. This was not the character of the Magic of the ancient Egyptians, so much celebrated by the most respectable Authors of Antiquity, and by the Sacred Books themselves. These were the principles of correspondence and of harmony which *Pythagoras* derived

from their stores, which he imported into Europe, and which there became the sources of the various branches of Philosophy that appeared after his time, nay the source of the Arts likewise, which did not begin to flourish there till that period; for the Arts are only imitations of the processes of Nature.

Though my incapacity is very great, these harmonic principles are so luminous that they have presented to me not only dispositions of the Globe entirely new; but they have besides furnished me with the means of distinguishing the characters of plants on the first inspection, so as to be able to say at once This is a native of the mountains, That is an inhabitant of the shores. By them I have demonstrated the use of the leaves of plants, and have determined by the nautical or volatile forms of their grains, the relations which they have to the places where they are destined to grow. I have observed that the *corollæ* of their flowers had relations, positive or negative, to the rays of the Sun, according to the difference of Latitude, and to the points of elevation at which they are to blow. I have afterwards remarked the charming contrasts of their leaves, of their flowers, of their fruits, and of their stems, with the soil and the sky in which they grow, and those which they form from genus to genus, being, if I may say so, grouped by pairs. Finally, I have indicated the relations in which they stand to animals, and to Man, to such a degree, that I am confident to affirm, I have demonstrated there is not a single shade of colour impressed by chance, through the whole extent of Nature.

By prosecuting these views, I have supplied the means of forming complete chapters of Natural History, from having evinced that each plant was the centre of the existence of an infinite number of animals, which possess correspondencies with it to us still unknown. Their harmonies might undoubtedly be extended much farther; for many plants seem to have relations not only to the Sun, but to different constellations. It is not always such an elevation of the Sun above the Horizon which elicits the vegetative powers of plants. Such a one flourishes in the Spring, which would not put out the smallest leaf in Autumn, though it might then undergo the same degree of heat. The same thing is observable with respect to their seeds, which germinate and shoot at one season, and not at another, though the temperature may be the same.

These celestial relations were known to the ancient Philosophy of the Egyptians, and of *Pythagoras*. We find many observations on this subject in *Pliny*; when he says for example that toward the rising of the Pleiades, the olive-trees and vines conceive their fruit; and after *Virgil*, that wheat ought to be sown immediately on the retiring of this constellation; and lentils on that of Bootes; that reeds and willows should be planted when the constellation of the Lyre is setting. It was after these relations, the causes of which are unknown to us, that *Linnaeus* formed with the flowers of plants a botanical almanac, of which *Pliny* suggested the first idea to the husbandmen of his time.* But we have indicated vegetable harmonies still more interesting, by demonstrating that the time of the expansion of every plant, of it's flowering, and of the maturity of it's fruit, was connected with the expansions and the necessities of the animal creation, and especially with those of Man. There is not a single one but what possesses relations of utility to us, direct or indirect: but this immense and mysterious part of the History of Man will perhaps never be known, except to the Angels.

My third Part presents the application of these harmonic principles to the Nature of Man himself. In it I have shewn, That he is formed of two powers, the one physical and the other intellectual, which affect him perpetually with two contrary sentiments, the one of which is that of his misery, and the other that of his excellence. I have demonstrated, that these two powers were most happily gratified in the different periods of the passions, of the ages and of the occupations to which Nature has destined Man, such as agriculture, marriage, the settlement of posterity, Religion.

I have dwelt principally on the affections of the intellectual power, by rendering it apparent that every thing which has the semblance of delicious and transporting in our pleasures, arose from the sentiment of infinity, or of some other attribute of DEITY, which discovered itself to us as the termination of our perspective. I have demonstrated, on the contrary, that the source of our miseries and of our errors, might be traced up to this, That in the social state we frequently cross those natural sentiments by the prejudices of education and of society: so

* Consult his Natural History, Book xviii. chap. 28

that, in many cases, we make the sentiment of infinity to bear upon the transient objects of this World, and that of our frailty and misery upon the immortal plans of Nature. I have only glanced at this rich and sublime subject; but I assert with confidence, that by pursuing this track simply, I have sufficiently proved the necessity of virtue, and that I have indicated it's real source, not where our modern Philosophers seek for it, namely in our political institutions, which are often diametrically opposite to it, but in the natural state of Man, and in his own heart.

I have afterwards applied, with what ability I possess, the action of these two powers to the happiness of Society, by shewing, first, that most of the ills we endure are only social reactions, all of which have their grand origin in overgrown property, in employments, in honours, in money, and in land. I have proved that those enormous properties produce the physical and moral indigence of a Nation; that this indigence generated, in it's turn, swarms of debauched men, who employed all the resources of craft and industry to make the rich refund the portion which their necessities demand; that celibacy, and the disquietudes with which it is attended, were in a great many citizens the effects of that state of penury and anguish to which they found themselves reduced; and that their celibacy produced, by repercussion, the prostitution of women of the town; because every man who abstains from marriage, whether voluntarily or from necessity, devotes a young woman to a single life, or to prostitution. This effect necessarily results from one of the harmonic laws of Nature, as every man comes into the World, and goes out of it, with his female, or what amounts to the same thing, the males and females of the human species are born and die in equal numbers. From these principles I have deduced a variety of important consequences.

I have finally demonstrated, that no inconsiderable part of our physical and moral maladies proceeded from the chastisements, the rewards, and the vanity of our education.

I have hazarded sundry conjectures, in the view of furnishing to the people abundant means of subsistence and of population, and of re-animating in them the spirit of Religion and of Patriotism, by presenting them with certain perspectives of infinity, without which the felicity of a Nation, like that of an individual,

is negative, and quickly exhausted, were we to form plans in other respects the most advantageous, of finance, of commerce, and of agriculture. Provision must be made, at once, for Man, as an animal, and as an intelligent being. I have terminated those different projects, by presenting the sketch of a National Education, without which it is impossible to have any species of Legislation or of Patriotism that shall be of long duration. I have endeavoured to unfold in it at once the two powers, physical and intellectual, of Man, and to direct them toward the love of Country and of Religion.

I must no doubt have frequently gone astray in pursuing paths so new, and so intricate. I must have many a time sunk far below my subject, from the construction of my plans, from my inexperience, from the very embarrassment of my style; but, I repeat it, provided my ideas shall suggest superior conceptions to others, I am well satisfied. At the same time, if calamity be the road to Truth, I have not been destitute of means to direct me toward her. The disorders of which I have frequently been the witness, and sometimes the victim, have suggested to me ideas of order. I have sometimes found upon my road great personages of high repute, and men belonging to respectable bodies, who had the words Country and Humanity continually in their mouth. I associated with them, in the view of deriving illumination from their intelligence, and of putting myself under the protection of their virtues; but I discovered them to be intriguers merely, who had no other object in view but their personal fortune, and who began to persecute me the moment that they perceived I was not a proper person to be either the agent of their pleasures, or the trumpeter of their ambition. I then went over to the side of their enemies, promising myself to find among them the love of truth, and of the public good; but however diversified our sects, our parties, and our corps may be, I every where meet the same men, only clothed in different garbs. As soon as the one or the other found that I refused to enlist as a partizan, he calumniated me, after the perfidious manner of the age, that is by pronouncing my panegyric. The times we live in are highly extolled; but if we have on the throne a Prince who emulates *Marcus Aurelius*, the age rivals that of *Tiberius*.

Were I to publish the memoirs of my own life,* I could wish for no stronger proof of the contempt which the glory of this World merits, than to hold up to view the persons who are the objects of it. At the time when, unconscious of having com-

* It would be I acknowledge after all a matter of very small importance; but however retired at this day my condition of life may be, it has been interwoven with revolutions of high moment. I presented, on the subject of Poland, a very circumstantial memoir to the Office for Foreign Affairs, in which I predicted it's partition by the neighbouring Powers several years before it was actually accomplished. The only mistake I committed was in going on the supposition that the partitioning Powers would lay hold of it entirely; and I am astonished to this hour that they did not. This memoir however has been of no utility either to that country or to myself, though I had exposed myself to very great risks in it, by throwing myself, when I quitted the Russian service, into the party of the Polish Republicans, then under the protection of France and of Austria. I was there taken prisoner in 1765, as I was going, with the approbation of the Ambassador of the Empire, and of the French Minister at Warsaw, to join the army commanded by Prince *Radjvil*. This misfortune befel me about three miles from Warsaw, through the indiscretion of my guide. I was carried back to that city, put in prison, and threatened with being delivered up to the Russians, whose service I had just quitted, unless I acknowledged that the Ambassador of the Court of Vienna, and the Minister of France, had concurred in recommending this step to me. Though I had every thing to fear on the part of Russia, and had it in my power to involve in my disgrace two personages in illustrious situations, and consequently to render it more conspicuous, I persisted in taking the whole upon myself. I likewise did my utmost to exculpate the guide, to whom I had given time to burn the dispatches with which he was entrusted, by keeping back, with my pistol in my hand, the Houlands who had just surprised us by night, in the post-house, where we made our first encampment in the midst of the woods.

I never had the least shadow of recompense for either of these two pieces of service, which cost me a great deal of both time and money. Nay it is not very long since I was actually in debt for part of the expense of my journey, to my Friend *M. Hemin*, then Minister of France at Warsaw, now First Commissary for Foreign Affairs at Versailles, and who has given himself much fruitless trouble on the subject. Undoubtedly, had *M. the Count de Vergennes* been at that time Minister for Foreign Affairs, I should have been suitably rewarded, as he has procured for me some slight gratuities. I stand however to this hour indebted to the amount of more than four thousand livres (166*l.* 13*s.* 4*d.*) on that account, to different friends in Russia, Poland and Germany.

I have not been more fortunate in the Isle of France, to which I was sent Captain-Engineer of the Colony; for, in the first place, I was persecuted by the ordinary Engineers who were stationed there, because I did not belong to their corps. I had been dispatched to that Country, as to a situation favourable to making a fortune, and I must have run considerably in debt had

mitted the slightest injury to any one, after an infinity of fruitless voyages, services and labours, I was preparing in solitude these last fruits of my experience and application, my secret enemies, that is the men under whom I scorned to enlist as a partizan, found means to intercept a gratuity which I annually received from the beneficence of my Sovereign. It was the only source of subsistence to myself, and the only means I enjoyed of assisting my family. To this catastrophe were added the loss of health, and domestic calamities which baffle all the powers of description. I have hastened therefore to gather the fruit, though still immature, of the tree which I had cultivated with such unwearied perseverance, before it was torn up by the tempest.

But I bear no malice to any one of my persecutors. If I am one day laid under the necessity of exposing to the light their secret practises against me, it shall only be in the view of justifying my own conduct. In other respects I am under obligation to them. Their persecution has proved the cause of my repose. To their disdainful ambition I am indebted for a liberty which I prize far above their greatness. To them I owe the delicious studies to which I have devoted my attention. Providence has

I not submitted to live on herbs. I pass over in silence all the particular distresses I had there to undergo. I shall only say, that I endeavoured to dissipate the mortification which they cost me, by employing my mind on the subject of the ills which oppressed the island in general. It was entirely in the view of remedying these, that I published, on my return from thence, in 1773, my *Voyage to the Isle of France*. I considered myself, first, as rendering an essential service to my Country, by making it apparent that this island, which is kept filled with troops, was in no respect proper for being the staple, or the citadel of our commerce with India, from which it is more than fifteen hundred leagues distant. This I have even proved by the events of preceding wars, in which Pondicherry has always been taken from us, though the Isle of France was crowded with soldiers. The late war has confirmed anew the truth of my observations. For these services, as well as for many others, I have received no other recompense save indirect persecutions and calumnies, on the part of the inhabitants of that island, whom I reprehended for their barbarity to their slaves. I have not even received an adequate indemnification for a species of shipwreck which I underwent on my return, at the Island of Bourbon, nor for the smallness of my appointments, which were not up to the half of those of the ordinary Engineers of my rank. I am well assured that, under a Marine Minister as intelligent and as equitable as M. the *Mareschal de Castries*, I should have reaped some part of the fruit of my literary and military services.

not abandoned me, though they have. It has raised up friends, who have served me as opportunity offered with my Prince ; and others will arise to recommend me to his favour, when it may be necessary. Had I reposed in GOD that confidence which I put in men, I should have always enjoyed undisturbed tranquillity : the proofs of his Providence as affecting myself, in the past, ought to set my heart at rest about futurity. But from a fault of education, the opinions of men still exercise too much dominion over me. By their fears and not my own is my mind disturbed. Nevertheless I sometimes say to myself, Wherefore be embarrassed about what is to come ? Before you came into the World were you disquieted with anxious thoughts about the manner in which your members were to be combined, and your nerves and your bones to expand ? When in process of time you emerged into light, did you study optics in order to know how you were to perceive objects ; and anatomy, in order to learn how to move about your body, and how to promote it's growth ? These operations of Nature, far superior to those of men, have taken place in you without your knowledge, and without any interference of your own. If you disquieted not yourself about being born, Wherefore should you about living, and Wherefore about dying ? Are you not always in the same hand ?

Other sentiments however, natural to the mind of Man, have filled me with dejection. For example, Not to have acquired after so many peregrinations and exertions, one little rural spot, in which I could in the bosom of repose have arranged my observations on Nature, to me of all others the most amiable and interesting under the Sun. I have another source of regret still more depressing, namely the misfortune of not having attached to my lot a female mate, simple, gentle, sensible and pious, who much better than Philosophy would have soothed my solitudes, and who, by bringing me children like herself, would have provided me with a posterity incomparably more dear than a vain reputation. I had found this retreat and this rare felicity, in Russia, in the midst of honourable employment ; but I renounced all these advantages, to go in quest, at the instigation of Ministers, of employment in my native Country, where I had nothing similar after which to aspire. Nevertheless I am enabled to say, that my particular studies have repaired the first privation, in procuring for me the enjoyment not only of a small!

spot of ground, but of all the harmonies diffused over the vast garden of Nature. An estimable partner for life cannot be so easily replaced ; but if I have reason to flatter myself that this Work is contributing to multiply marriages, to render them more happy, and to soften the education of children, I shall consider my own family as perpetuated in them, and I shall look on the wives and children of my Country as in some sense mine.

Nothing is durable, Virtue alone excepted. Personal beauty passes quickly away ; fortune inspires extravagant inclinations ; grandeur fatigues ; reputation is uncertain ; talents, nay genius itself, are liable to be impaired : but Virtue is ever beautiful, ever diversified, ever equal, and ever vigorous, because it is resigned to all events, to privations as to enjoyments, to death as to life.

Happy then, happy beyond conception, if I have been enabled to contribute one feeble effort toward redressing some of the evils which oppress my Country, and to open to it some new prospect of felicity ! Happy, if I have been enabled to wipe away, on the one hand, the tears of some unfortunate wretch, and to recal, on the other, men misled by the intoxication of pleasure, to the DIVINITY, toward whom Nature, the times, our personal miseries, and our secret affections, are attracting us with so much impetuosity !

I have a presentiment of some favourable approaching revolution. If it does take place, to the influence of literature, we shall be indebted for it. In modern times learning produces little solid benefit to the persons who cultivate it ; nevertheless it directs every thing. I do not speak of the influence which letters possess all the Globe over, under the government of books. Asia is governed by the maxims of *Confucius*, the Korans, the Beths, the Vidams, and the rest ; but in Europe, *Orpheus* was the first who associated it's inhabitants, and allured them out of barbarism by his divine poesy. The genius of *Homer* afterwards produced the legislations and the religions of Greece. He animated *Alexander*, and sent him forth on the conquest of Asia. He extended his influence to the Romans, who traced upward, in his sublime poetical effusions, the genealogy of the founder, and of the sovereigns of their Empire, as the Greeks had found in him the rudiments of their Republics and of their Laws. His august shade still presides over the poetry, the liberal Arts,

the Academies, and the Monuments of Europe : such is the power over the human mind, exercised by the perspectives of DEITY which he has presented to it ! Thus the Word which created the World still governs it ; but when it had descended itself from Heaven, and had shewn to Man the road to happiness in Virtue alone, a light more pure than that which had shed a lustre over the islands of Greece, illuminated the forests of Gaul. The Savages who inhabited them would have been the happiest of Mankind, had they enjoyed liberty ; but they were subjected to tyrants, and those tyrants plunged them back into a sacred barbarism, by presenting to them phantoms so much the more tremendous, that the objects of their confidence were transformed into those of their terror.

The cause of human felicity, and of Religion herself, was on the brink of desperation, when two men of letters, *Rabelais* and *Michael Cervantes*, arose, the one in France and the other in Spain, and shook at once the foundations of monastic power* and that of chivalry. In levelling these two Colossuses to the ground, they employed no other weapons but ridicule, that natural contrast of human terror. Like to children, the Nations of Europe laughed and resumed their courage : they no longer felt any other impulsions toward happiness but those which their Princes chose to give them, if their Princes had then been capable of communicating such impulsion. The *Telemachus* made it's appearance, and that Book brought Europe back to the harmonies of Nature. It produced a wonderful revolution in Politics. It recalled Nations and their Sovereigns to the useful arts, to commerce, to agriculture, and above all, to the sentiment of DEITY. That Work united to the imagination of *Homer* the wisdom of *Confucius*. It was translated into all the lan-

* God forbid that I should be thought to insinuate an invective against persons, or orders, truly religious. Supposing them to possess no higher merit in this life, than that of passing it without doing mischief, they would be respectable in the eyes of infidelity itself. The persons here exposed are not men really pious, who have renounced the World, in order to cherish without interruption the spirit of Religion ; but those who have assumed a habit consecrated by Religion, to procure for themselves the riches and the honours of this World ; those against whom *St. Jerome* thundered so vehemently to no purpose, and who have verified his prediction in Palestine and in Egypt, in bringing Religion into discredit by the profligacy of their manners, by their avarice and their ambition.

guages of Europe. It was not in France that it excited the highest admiration: there are whole Provinces in England where it is still one of the books in which children are taught to read. When the English entered the Cambrasis with the allied army, they wished to carry the Author, who was living there in a state of retirement from the Court, into their camp, to do him the honours of a military festival; but his modesty declined that triumph: he concealed himself. I shall add but one trait to his elogium: he was the only man living of whom *Louis XIV.* was jealous: and he had reason to be so; for while he was exerting himself to excite the terror, and purchase the admiration of Europe, by his armies, his conquests, his banquets, his buildings, and his magnificence, *Fenelon* was commanding the adoration of the whole World by a Book.*

Many learned men, inspired by his genius, have changed among us the spirit of the Government, and the public manners. To their Writings we are indebted for the abolition of

* It is absurd to institute a comparison between *Bossuet* and *Fenelon*: I am not capable of appraising their several merits, but I cannot help considering the second as highly preferable to his rival. He fulfilled, in my apprehension, the two great precepts of the Law: HE LOVED GOD AND MEN.

The Reader will perhaps not be displeased at being told what *J. J. Rousseau* thought of this great man. Having one day set out with him on a walking excursion to Mount Valerien, when we had reached the summit of the mountain, it was resolved to ask a dinner of it's hermits, for payment. We arrived at their habitation a little before they sat down to table, and while they were still at Church. *J. J. Rousseau* proposed to me to step in and offer up our devotions. The hermits were at that time reciting the Litanies of Providence, which are remarkably beautiful. After we had addressed our prayer to God, in a little chapel, and as the hermits were proceeding toward their refectory, *Rousseau* said to me, with his heart overflowing: "At this moment I experience what is said in the Gospel: *Where two or three are gathered together in my name, there am I in the midst of them.* There is here a sentiment of peace and of felicity which penetrates the soul." I replied: "If *Fenelon* had lived, you would have been a Catholic." He exclaimed in an extasy, and with tears in his eyes: "O! if *Fenelon* were in life, I would struggle to get into his service as lackey, in hope of meriting the place of his valet de chambre."

Having picked up some time ago on the Pont-Neuf, one of those little urns which the Italians sell about the streets for a few halfpence a-piece, the idea struck me of converting it, as a decoration of my solitude, into a monument sacred to the memory of *John James* and of *Fenelon*, after the manner of those which the Chinese set up to the memory of *Confucius*. As there are two little scutcheons on this urn, I wrote on the one these words, *J. J. ROUSSEAU*

many barbarous customs, such as that of punishing capitally the pretended crime of witchcraft; the application of the rack to all criminals without distinction; the remains of fudal slavery; the practice of wearing swords in the bosom of cities, in times of profound peace, and many others. To them we owe the return of the tastes, and of the duties of Nature, or at least their images. They have restored to many infants the breasts of their mothers, and to the rich a relish for the country, which induces them now-a-days to quit the centre of cities, and to take up their habitation in the suburbs. They have inspired the whole Nation with

and on the other F. FENELON. I then placed it in an angle of my cabinet, about six feet from the floor, and close by it the following inscription:

D. M.

A la gloire durable & pure.

De ceux dont le génie éclaira les vertus,
Combattit a la fois l'erreur & les abus,
Et tenta d'amener le siècle a la Nature.

AUX JEAN-JACQUES ROUSSEAU, AUX FRANÇOIS FENELONS.

J'ai dédié ce monument d'argile,
Que j'ai consacré par leur noms,
Plus augustes que ceux de CESAR & d'ACHILLE.
Ils ne sont point fameux par nos malheurs :
Ils n'ont point, pauvres laboureurs,
Ravi vos bœufs, ni vos javelles ;
Bergères, vos amans ; nourissons, vos mamelles ;
Rois, les états ou vous réglez :
Mais vous les comblerez de gloire,
Si vous donnez a leur mémoire
Les pleurs qu'ils vous ont épargnés

To the pure and unfading glory
Of the men whose virtues were illumined by genius ;
Who set their faces against error and depravity,
And laboured to bring Mankind back to Nature :
To the ROUSSEAU and the FENELONS of the Human Race,
I dedicate this humble monument of clay,
And inscribe it with their names,
Far more august than those of CESAR and ACHILLES
They purchased not fame by spreading devastation ;
They did not, O ye poor husbandmen,
Seize your oxen, and plunder your barns ;
Nor, shepherdesses, carry off your lovers ; nor, sucklings, your teats.
Nor, Kings, did they ravage your domains :
But their glory will be complete,
If on their memory you bestow
The tears which they have spared you

a taste for agriculture, which is degenerated, as usual, into fanaticism, since it became a spirit of corps. They have the honour of bringing back the noblesse to the commonalty, toward whom it must be confessed they had already made some steps of approximation, by their alliances with finance; they have recalled that order to their peculiar duties by those of humanity. They have directed all the powers of the State, the women themselves not excepted, toward patriotic objects, by arraying them in attractive ornaments and flowers.

O ye men of letters! without you the rich man would have no manner of intellectual enjoyment; his opulence and his dignities would be a burthen to him. You alone restore to us the rights of our nature, and of DEITY. Wherever you appear, in the military, in the clergy, in the laws, and in the arts, the divine Intelligence unveils itself, and the human heart breathes a sigh. You are at once the eyes and the light of the Nations. We should be perhaps at this hour much nearer to happiness, if several of your number, intent on pleasing the multitude, had not misled them by flattering their passions, and by mistaking their deceitful voices for those of human nature.

See how these passions have misled yourselves, from your having come too closely into contact with men! It is in solit de, and living together in unity, that your talents communicate mutual intellectual light. Call to remembrance the times when the *La Fontaines*, the *Boileaus*, the *Racines*, the *Molieres*, lived with one another. What is at this day your destiny? That World whose passions you are flattering arms you against each other. It turns you out to a strife of glory, as the Romans exposed the wretched to wild beasts. Your holy lists are become the amphitheatres of gladiators. You are, without being conscious of it, the mere instruments of the ambition of corps. It is by means of your talents that their leaders procure for themselves dignities and riches, while you are suffered to remain in obscurity and indigence. Think of the glory of men of letters among the Nations who were emerging out of barbarism; they presented virtue to Mankind, and were exalted into the rank of their Gods. Think of their degradation among Nations sunk into corruption: they flattered their passions, and became the victims of them. In the decline of the Roman Empire, letters were no longer cultivated, except by a few enfranchised Greeks. Suffer the

herd to run at the heels of the rich and the voluptuous. What do you propose to yourselves in the sacred career of letters, except to march on under the protection of *Minerva*? What respect would the World shew you were you not covered by her immortal Egis? It would trample you under foot. Suffer it to be deceived by those who are mean enough to be it's worshippers; repose your confidence in Heaven, whose support will search and find you out wherever you may be.

The vine one day complained to Heaven, with tears, of the severity of her destiny. She envied the condition of the reed. "I am planted," said she, "amidst parched rocks, and am obliged to produce fruits replenished with juice; whereas in the bottom of that valley the reed, which bears nothing but a dry shag, grows at her ease by the brink of the waters." A voice from Heaven replied: "Complain not, O vine! at thy lot. Autumn is coming on, when the reed will perish without honour on the border of the marshes; but the rain of the skies will go in quest of thee in the mountains, and thy juices, matured on the rock, shall one day serve to cheer the heart of God and Man."

We have, farther, a considerable ground of hope of reformation in the affection which we bear to our Kings. With us the love of Country is one and the same thing with the love of our Prince. This is the only bond which unites us, and which oftener than once has prevented our falling to pieces. On the other hand, Nations are the real monuments of Kings. All those monuments of stone, by which so many Princes have dreamt of immortalizing their names, frequently served only to render them detestable. *Pliny* tells us that the Egyptians of his time cursed the memory of the Kings of Egypt who had built the pyramids; and besides their names had sunk into oblivion. The modern Egyptians allege that they were raised by the Devil, undoubtedly from the sentiment of the distress which rearing those edifices must have cost Mankind. Our own People frequently ascribe the same origin to our ancient bridges, and to the great roads cut through rocks whose summits are lost in the clouds. To no purpose are medals struck for their use; they understand nothing about emblems and inscriptions. But it is the heart of Man on which the impression ought to be made, by means of benefits conferred; the stamp there imprinted is

never to be effaced. The People have lost the momery of their Monarchs who presided in councils, but they cherish to this day, the remembrance of those of them who supped with millers.

The affection of the People fixes on one single quality in their Prince; it is his popularity; for it is from this that all the virtues flow of which they stand in need. A single act of justice dispensed unexpectedly, and without ostentation, to a poor widow, to a collier, fills them with admiration and delight. They look upon their Prince as a God, whose Providence is at all times and in every place upon the watch: and they are in the right; for a single interposition of this nature, well-timed, has a tendency to keep every oppressor in awe, and enlivens all the oppressed with hope. In our days venality and pride have reared, between the People and their Sovereign, a thousand impenetrable walls of gold, of iron, and of lead. The People can no longer advance toward their Prince, but the Prince has it still in his power to descend toward the People. Our Kings have been prepossessed on this subject with groundless fears and prejudices. It is singularly remarkable nevertheless, that among the great number of Princes of all Nations who have fallen the victims of different factions, not a single one ever perished when employed in acts of goodness, walking about on foot, and *incognito*; but all of them, either riding in their coaches, or at table in the bosom of pleasure, or in their court surrounded by their guards, and in the very centre of their power.

We see at this hour the Emperor and the King of Prussia, in a carriage simply, with one or two domestics and no guards, traversing their scattered dominions, though peopled in part with strangers and conquered Nations. The great men and the most illustrious Princes of Antiquity, such as *Scipio*, *Germanicus*, *Marcus Aurelius*, travelled without retinue, on horseback, and frequently on foot. How many provinces of his kingdom, in an age of trouble and faction, were thus travelled over by our Great *Henry IV*?

A King in his States ought to be like the Sun over the Earth, on which there is not one single little plant, but what receives, in it's turn, the influence of his rays. Of the knowledge of how many important truths are our Kings deprived by the prejudices of courtiers? What pleasures do they lose from their sedentary

mode of life! I do not speak of those of grandeur, when they see on their approach, Nations flocking together in millions, along the highways; the ramparts of cities set on fire with the thunder of artillery, and squadrons issuing out of their sea-ports, and covering the face of the Ocean with flags and flame. I believe they are weary of the pleasures of glory. But I can believe them sensible to those of humanity, of which they are perpetually deprived. They are for ever constrained to be Kings, and never permitted to be Men. What delight might it not procure them to spread a veil over their greatness, like the Gods, and to make their appearance in the midst of a virtuous family, like *Jupiter* at the fire-side of *Philemon* and *Baucis*! How little would it cost them to make happy people every day of their lives! In many cases, what they lavish on a single family of courtiers would supply the means of happiness to a whole Province. On many occasions their appearance merely would overawe all the tyrants of the district, and console all the miserable. They would be considered as omnipresent, when they were not known as confined to a particular spot. One confidential friend, a few hardy servants, would be sufficient to bring within their reach all the pleasures of travelling from place to place, and to screen them from all the inconveniencies of it.

They have it in their power to vary the seasons as they will, without stirring out of the kingdom, and to extend their pleasures to the utmost extent of their authority. Instead of inhabiting country residences on the banks of the Seine, or amidst the rocks of Fontainbleau, they might have them on the shores of the Ocean, and at the bottom of the Pyrenees. It depends altogether on themselves, to pass the burning heats of summer embosomed in the mountains of Dauphiné, and encompassed with a horizon of snow; the Winter in Provence, under olive-trees and verdant oaks; the Autumn, in the ever-green meadows, and amidst the apple orchards of fertile Normandy. They would every day behold arriving on the shores of France, the seafaring men of all Nations, British, Spanish, Dutch, Italian, all exhibiting the peculiarities and the manners of their several countries. Our Kings have in their palaces comedies, libraries, hot-houses, cabinets of Natural History; but all these collections are only vain images of Men and of Nature. They possess no

gardens more worthy of them than their kingdoms, and no libraries so fraught with instruction as their own subjects.*

Ah! if it be possible for one single man to constitute on this earth the hope of the Human Race, that Man is a King of France. He reigns over his People by love, his People over the rest of Europe by manners, Europe over the rest of the

* Here undoubtedly the volume ought to have closed. It is no inconsiderable mortification to me, that my duty as a Translator, permitted me not to retrench the piece of extravagance which follows. In justice to myself however I transmit it to the British Public, with an explicit disavowal of it's spirit, of it's style, of it's sentiments, and of it's object. I can excuse the rapturous vanity of a Frenchman, when his Prince, or when his Republic is the theme; I can not only excuse, but likewise commend, the effusions of a grateful heart, filled with the idea of a kingly benefactor; I can excuse the self-complacency of an Author contemplating the probable success and influence of a good Book, his own production; nay I can make allowance for a good Catholic, exalting a Saint upon Earth into an intercessor in Heaven: But who can forbear smiling, or rather weeping, at the airy visions of a returning golden age, on the very eve of an explosion of the age of iron, clothed in every circumstance of horror! Who but must be kindled into indignation, at seeing genius degraded into a servile minister of fulsome adulation, to the vilest of women? Who but must deride the pretensions so frequently advanced, by the wise and by the unwise, and as frequently exposed, to the gift of predicting future events?

In Latin, the same word, *Vates*, denotes both Poet and Prophet; and the two characters are by no means incompatible. Our Author is no mean Poet, he is a first-rate Naturalist, he is an eloquent Writer, and what is above all, he is a good and estimable Man; but events have demonstrated that he is but a wretched Prophet. A few short years have scattered his fond prognostics "into air, thin air." He makes it one of the glories of the reign of *Louis XVI.* that he "supported the oppressed Americans." Whatever political sagacity might have dictated, or predicted, at the time, respecting his interference in the dispute between Great-Britain and her American Colonies, the issue has demonstrated that this interference was injudicious and impolitic, as far as he was personally concerned. The support which he gave to *oppressed* America, laid an accumulated weight on *oppressed* France, and precipitated that Revolution, which by progressive steps abridged his power, annihilated his splendour, hurled him from his throne, subjected his neck to the axe, and blasted the prospects of his Family. Here was one of the fearful re-actions of a righteous Providence.

The nauseous elogium pronounced on the *charms and sensibility of his august Consort* is still more intolerable. It is notorious to all Europe, that the lewdness, the pride, the prodigality, the ambition, the resentments, of that bad woman, filled up the measure of moral depravity among the higher orders in France, embroiled the two Hemispheres of the Globe in the horrors of war; and ruined her Country, ruined her Husband, ruined Herself, ruined her Posterity. Another of the re-actions of a righteous Providence.—H. H

Globe by power. Nothing prevents his doing good when he pleases. It is in his power, notwithstanding the venality of employments, to humble haughty vice, and to exalt lowly virtue. It is farther in his power, to descend toward his subjects, or to bid them rise toward him. Many Kings have repented that they had placed their confidence in treasures, in allies, in corps, and in grandees ; but no one that he had trusted in his People, and in God. Thus reigned the popular *Charles V.* and the St. *Louises*. Thus you shall one day have reigned, O *Louis XVI!* You have from your very first advances to the throne, given laws for the re-establishment of manners ; and what was still more difficult, you have exhibited the example in the midst of a French Court. You have destroyed the remains of feudal slavery, mitigated the hardships endured by unfortunate prisoners, as well as the severity of civil and military punishments ; you have given to the inhabitants of certain provinces the liberty of assessing themselves to the public imposts, remitted to the Nation the dues of your accession to the Crown, secured to the poor seamen a part of the fruits of war, and restored to men of letters the natural privilege of reaping those of their labours.

While with one hand you were assisting and relieving the wretched part of the Nation, with the other you raised statues to it's illustrious men of ages past, and you supported the oppressed Americans. Certain wise men who are about your person, and what is still more potent than their wisdom, the charms and the sensibility of your august Consort have rendered the path of virtue easy to you. O great King ! if you proceed with constancy in the rough paths of virtue, your name will one day be invoked by the miserable of all Nations. It will preside over their destinies even during the life of their own Sovereigns. They will present it as a barrier to oppose their tyrants, and as a model to their good Kings. It will be revered from the rising to the setting of the Sun, like that of the *Tituses* and of the *Antoninuses*. When the Nations which now cover the Earth shall be no more, your name shall still live, and shall flourish with a glory ever new. The Majesty of ages shall increase it's venerability, and posterity the most remote shall envy us the felicity of having lived under your government.

I, Sire, am nothing. I may have been the victim of public calamities, and remain ignorant of the causes. I may have

spoken of the means of remedying them, without knowing the power and the resources of mighty Kings. But if you render us better and more happy, the *Tacituses* of future times will study, from you, the art of reforming and governing men in a difficult age. Other *Fenelons* will one day speak of France, under your reign, as of happy Egypt under that of *Sesostris*. Whilst you are then receiving upon Earth the invariable homage of men, you will be their mediator with DEITY, of whom you shall have been among us the most lively image. Ah! if it were possible that we should lose the sentiment of his existence from the corruption of those who ought to be our patterns, from the disorder of our passions, from the wanderings of our own understanding, from the multiplied ills of humanity: O King! it would be still glorious for you to preserve the love of order in the midst of the general disorder. Nations, abandoned to the will of lawless tyrants, would flock together for refuge to the foot of your throne, and would come to seek in you, the God whom they no longer perceived in Nature.

SEQUEL

TO THE

STUDIES OF NATURE.

ADVERTISEMENT.

WHILE I was preparing for a re-publication of this Work, I received, on the subject of it, advices, criticisms and compliments.

The advices related to it's form. I have constantly adhered to that of 12mo. in these three successive Editions, because it is more commodious, an easier purchase to the Reader, and more beneficial to the Author, because Pirates find less profit in counterfeiting it. The fashionable world however signified a preference in favour of an 8vo. as being more genteel, and because the page having a broader margin, and admitting of a larger space between the lines, the impression would be more beautiful. Men of letters expressed a wish to have an Edition of the Book in 4to. because, being in a larger type, it would be more pleasant to read, and the plates might then be engraved on a larger scale. In a word, I was expecting a solicitation from some of the *Literati*, to aspire after the honours of a Folio, when an amiable Lady proposed to me very seriously to give an Edition in 18mo. "on purpose," said she, with inimitable grace, "that I may never go without it in my pocket."

I feel myself so highly honoured by the good opinion of the Ladies, that I know not whether my vanity would not be more agreeably flattered with being in their pockets in the size of an 18mo. than in that of a huge atlas in the library of the Louvre. This species of going about *incognito* has, besides, an inexpressible somewhat in it which is singularly grateful to me. In the agreeable perplexity to which I am reduced, and under an impossibility of giving four new Editions at once, to gratify the taste of all my Readers, a thought struck me, of inviting those of them who dislike the 12mo. size, to send their instructions, free

of postage, to my Booksellers, containing simply their address, and the form which they prefer. I shall then be determined by the plurality of suffrages ; and as soon as I shall have five hundred of them in favour of an Octavo or a Quarto, I shall publish it by subscription on a fine paper, with new plates drawn and engraved by Artists of the first ability. But if there be only two hundred and fifty voices in favour of the Decimo-octavo, I will give the preference to this size, for I have always estimated the suffrage of one Lady as equal at least to those of two Gentlemen.

Some men of the world have enquired, whether I intended to make any additions to this Impression ; and in this case desired me to give a detached supplement, for the accommodation of those who have purchased any of the preceding Editions, alleging that Authors who acted otherwise defrauded the Public.

An Author who is difficult to please with his own performance, which I acknowledge to be the case with myself, and who is frequently called upon to review it, is sometimes reduced to the necessity of making a few slight additions, in order to elucidate passages which may seem to labour under some obscurity. He is obliged at least to change some things in the notices, which must needs vary in every different Edition, without admitting the possibility of giving these variations in a detached supplement, so as to excite any interest. But on the supposition of his thereby defrauding a part of the Public of some part of his performance, I ask, whether the Public as a body does not defraud him more completely, by purchasing without any scruple the spurious Editions of his Work ? The only method which an Author can employ to bring these into discredit, is to add something new to every genuine Edition which he publishes.

These piracies have done, and are still doing me inconceivable mischief. I do not speak of those of my first Edition, with which the southern provinces of France have been filled ; * but

* *M. Marin*, superintendant of the press at Marseilles, seized a whole bale of those counterfeits, about a year and a half ago, which, in defiance of all his remonstrances, was confiscated to the benefit of the Syndical Chamber of that city, and not, as justice required, to mine. *M. de Chassel* superintendant of the press at Nancy, stopped there, about six months ago, some spurious copies of my second Edition, which *M. Vidaud-de-la-Tour* took care to

scarcely had the second appeared when it was counterfeited, with it's additions, approbations, privilege ; nay with the very title-pages containing the address of my booksellers. Other plunderers have had the audacity to announce, in the catalogue of books of Leipsic-fair for the month of October 1787, an Edition of my *Studies of Nature* published at Lyons, by *Piestre* and *de la Moliere*, though I never had any thing printed except at Paris. A new Edition of the Work has just been published at Brussels in four volumes. A Gentleman, with whom my Printer is acquainted, saw at London in the month of September last, four different Editions of it, without being able to procure the genuine one. It may however be very easily distinguished by the beauty of it's characters, from all the spurious Editions, which besides can never be any thing more than bad copies of an original Edition, revised and corrected by my own hand, with all the attention of which I am capable. All this has not prevented the Public from welcoming them with avidity. After all, the point to be aimed at, is not to have no ground of complaint against Mankind, but to take care that the World may have no just ground of complaint against us.

Supposing it were not a matter of conscience with me to practise justice toward every individual, I am under too many obligations to the Public not to study their gratification, to the utmost of my ability. I have never enjoyed any other steady declaration in my favour, but that of the public voice. On the other hand, if the importance of the errors which I have ventured to attack, and my personal circumstances, are taken into consideration, I have the presumption to hope that the generosity of the Public will one day rank me with the few in number, who have devoted themselves to the interests of humanity, at the expense of their own fortune.

remit to me, conformably to the decision of *M. de Lamoignon*, keeper of the seals. The Pirate had only retrenched, in the advertisement, what I there said of the beauty of the characters of my second Edition, similar to those of the present, because the pitifulness of his own would presently have detected the fraud. I have now reason to expect, from the vigilance of *M. Vidaud-de-la-Tour*, whose zeal for the interests of literary property so well supports the justice of *M. de Lamoignon*, a name so dear to the republic of letters, that we shall see at length repressed, in the kingdom, the plundering committed by literary pirates, in defiance of Royal authority, and so injurious to the interest of Authors, especially of such as have no other property except their Works.

I shall not begin, at these years, to deviate from the principles which have governed my life. I am going to insert here therefore some reflections, which would perhaps have come in more properly in the advertisement prefixed to this third Edition; but I transfer them to this place, that those who are disposed to purchase the continuation separately, may be informed of every thing which I have thought it necessary to add, without being obliged to purchase the whole. I would have in like manner annexed the additions which I made to my first Edition, on the subject of the elongation of the Poles, and of the Currents of the Atlantic Ocean, had not these additions been too considerable in bulk. But if I do not introduce them here word for word I repeat at least the sense of them; and to these I subjoin new proofs, which demonstrate the certainty of those important truths.

I have first corrected, in the title-pages of this third Edition, an error which had slipped into those of the other two. It is indeed a matter of the last indifference to my Readers, being no more than a transposition of my baptismal names; but it has given occasion to some mistakes.

I do not recollect my having added any thing to the text, except a single observation respecting the counter-currents of the Ohio, which I have inserted in the first volume of this Edition. But it is of considerable importance, for it constitutes one proof more in favour of the explanation which I have given of the tides.

The Reader will please to remember, that I explain the direction of our tides in Summer toward the North, from the counter-currents, of the general Current of the Atlantic Ocean, which at that season descends from our Pole, whose ices are partly melted by the action of the Sun which warms it during six months. I supposed that this general Current, which then runs toward the South, being confined by the projection of Cape-Saint-Augustin in America, and by the entrance of the Gulf of Guinea in Africa, produced on each side counter-currents which give us our tides, re-ascending to the North along our coasts. These counter-currents actually exist in those same places, and are always produced on the two sides of a strait through which a current forces itself. But I had no need to suppose the re-actions of Cape Saint-Augustin and of the entrance of the Gulf

of Guinea, in order to make our tides re-ascend a very great way toward the North. The simple action of the general Current of the Atlantic, which descends from the North Pole and rushes toward the South, displacing by it's impetuosity a vast mass of water, which it repels to the right and to the left, is sufficient to produce, through the whole length of it's course, those lateral re-actions which occasion our tides, and make them flow to the North.

I had quoted on this subject two observations, the first of which is level to every capacity. It is that of a source which, on discharging itself into a bason, produces at the sides of that bason a backward motion or counter-current, which carries straws and other floating substances up toward the source.

The second observation is extracted from the History of New-France by Father *Charlevoix*. He tells us that though the wind was contrary, he sailed at the rate of eight good leagues a day up lake Michigan, against the general Current, with the assistance of it's lateral counter-currents.

But *M. de Crevecœur*, Author of the Letters of an American Farmer, goes still further ; for he assures us, (Vol. III. p. 433) that in sailing up the Ohio, along it's banks, he made 422 miles in fourteen days, which amounts to more than six leagues a day, "with the assistance," says he, "of the counter-currents, which have always a velocity equal to the principal Current." This is the only observation which I have added, on account of it's importance, and out of the respect which I bear to it's Author.

Thus the general effect of the tides is placed in the clearest light, by the instance of the lateral counter-currents of our basons, into which sources discharge themselves, by those of the lakes which receive rivers, and by those of rivers themselves, notwithstanding their considerable declivities, without any necessity for a particular strait, to produce those re-actions along the whole extent of their shores, though straits considerably increase these same counter-currents or eddies.

The course of our tides toward the North in winter, it must be admitted, cannot be explained as an effect of the lateral counter-currents of the Atlantic Ocean, which descends from the North, for at that season it's general Current comes from the South-Pole, the ices of which are then in fusion by the heat of the Sun. But the course of those tides toward the North may

be conceived still more easily, from the direct effect of the general Current of the South-Pole, which runs straight North. In this direction that southern Current passes almost throughout, from a wider space into a narrower, being confined, first of all, between Cape Horn and the Cape of Good-Hope, and forcing it's way upward into the very bays and mediterraneans of the North, it carries before it, at once, the whole mass of the waters of the Atlantic Ocean, without permitting a single column of them to escape to the right or to the left. At the same time, should it meet on it's road a Cape or Strait opposing it's course, there can be no doubt that it would there form a lateral counter-current, or tides, which would run in the opposite direction. This accordingly is the actual effect which it produces at Cape Saint-Augustin in America, and above the Gulf of Guinea, toward the tenth degree of northern Latitude, in Africa; that is, at the two places where these two parts of the Globe approach the nearest: for in the summer of the South-Pole, the Currents and the tides, so far from bearing northward below these two points, return to the South on the American side, and run eastward on the African side, the whole length of the Gulf of Guinea, in contradiction to all the Laws of the Lunar System.

I could fill a volume with new proofs in support of the alternate fusion of the polar ices, and of the elongation of the Earth at the Poles, which are consequences of each other; but I have produced in the preceding part of this Work, more than were necessary to establish the certainty of these truths. The very silence of Academies, respecting objects of such high importance, is a demonstration that they have no objection to start against my hypothesis. Had I been in the wrong, in refuting the unaccountable error which led them to conclude that this Earth was flattened at the Poles, from geometrical operations which evidently demonstrate it to be lengthened, Journals most of which are at their disposal, would not have been wanting to repress the voice of a solitary individual. I have met with but a single one who has had the hardiness to support me with a suffrage. Among so many literary Potentates, who dispute with each other the empire of opinion, and who traverse that stormy ocean, determined to sink to the bottom all who refuse to serve under their banner, a foreign Journalist has hoisted in my favour the flag of insurrection. It is that of Deux-Ponts which I

mention, conformably to my usual custom of acknowledging publicly the particular services done me ; though the one in question was rather a tribute presented to truth, than a compliment paid to me, who am personally unknown to that Writer, but whom I highly honour for his impartiality.

On the other hand, if Academies have not come forward to explain themselves, we must take into consideration the embarrassment to which they felt themselves reduced, that of retracting publicly a conclusion geometrically false, but rendered venerable by age and universally propagated. They could not adopt my results without condemning their own ; and it was impossible for them to condemn mine, because they were supported by actual operations performed by themselves. I myself have been no less embarrassed when, on publishing my observations, I found myself reduced to the alternative of chusing between their esteem and their friendship ; but I followed the impulse of the sentiment of truth, which ought to absorb every political consideration. The interest of my reputation I confess claimed some small share in deciding the point, but it was very small indeed. Public utility has been my leading object. I have employed neither ridicule nor enthusiasm, against men of celebrity detected in an error. I am not elevated into a state of intoxication on the score of my Reason. I approached them as I would have done to Plato laid asleep on the brink of a precipice ; fearing the moment of their awaking, and still more the prolongation of their slumbers. I have not imputed their blindness to any want of light, an insinuation to which the learned are so sensibly alive ; but to the glare of systems, and especially to the influence of education, and the power of moral habits, which cloud our reason with so many prejudices. I have given, in the advertisement to my first Volume, the origin of this error, which was first broached by *Newton*, and the geometrical refutation of it in the explanation of the plates at the head of that Volume.

I have reason to apprehend that my moderation and candor have not been imitated. There appeared on the 21st of last November, in the *Paris-Journal*, a very severe anonymous criticism of the *STUDIES OF NATURE*. It sets out indeed with a general commendation of that Work ; but it attempts to destroy, in detail, all the good which the public voice seems to have ex-

torted from it. These strictures had been preceded, a little while before, by certain other anonymous letters, in which my Book was not mentioned by name, but a cold and subtle poison was sprinkled over it, without any seeming design, but very much calculated to produce it's effect at the long-run. I was not a little surprized to find this masked battery opened by an unknown adversary upon me ; for I was conscious of having endeavoured to deserve well of all mankind, and could not imagine that I stood in any one's way. But on being informed that several of my friends had, to no purpose, presented to the Journal of Paris copies of verses, and prose strictures, in my vindication ; that long before this they had rejected some small literary pieces in which I was mentioned to advantage, I became convinced that a party had been there formed against me. Upon this I had recourse to the General Journal of France, the impartial Compiler of which had the goodness to insert my defence and remonstrance, in his paper of the 29th November, No. 143.

Here then is a copy of my reply to the critic who thought proper to employ concealment and sarcasm against physical truths, and who assumed, in making his attack upon me, the post of the coward, and the arms of the ruffian.

To the Compiler of the Journal-General of France.

“ SIR,

“ A WRITER who conceals himself under the description of
 “ a *Solitary of the Pyrenées*, jealous, I suppose, of the gracious
 “ reception bestowed by the Public on my *Studies of Nature*,
 “ has got inserted into the Journal of Paris, of yesterday the
 “ 21st, a very ill-natured criticism of that Work.

“ He seems to have taken particular offence at my having
 “ presumed to accuse the Academicians of an error, in conclu-
 “ ding from the increase of quantity in the degrees of Lati-
 “ tude, toward the Poles, that the Earth was flattened there ; at
 “ my attributing the cause of the tides to the melting of the
 “ polar ices, &c.....In order to weaken the force of my results,
 “ he exhibits them without the proofs. He carefully keeps out
 “ of sight my demonstration of the fact, so simple and so evi-
 “ dent, by which I have made it to appear, that when the de-
 “ grees of an arch of a circle lengthen, the arch of the circle

“itself likewise lengthens, and does not become flat. This is
“demonstrable from the poles of an egg, as well as from those
“of the Globe. He has not told, that the ices of each pole,
“having a circumference of from five to six thousand leagues,
“in their winter, and only from two to three thousand in their
“summer, I had good ground for concluding, from their alter-
“nate fusions, all the movements of the Seas. He has not said
“a single word of the multitude of proofs geometrical, nautical,
“geographical, botanical, and even academical, by which I have
“supported these new and important truths. I leave it to my
“Readers to judge how far they are solid.

“As it is evident that this anonymous Writer has observed
“Nature only in Systematic books; that he opposes names mere-
“ly to facts; and authorities to reasons; that he there considers
“as decidedly certain what I have completely refuted; that he
“makes me to say in his critique what I never did say; that
“such criticism is within the reach of every superficial, idle and
“dishonest man, who can hold a pen: that neither my health,
“my time, nor my taste permit me to confute such species of
“dissertation, even had the author the manliness to shew him-
“self: I declare, therefore, that in future, I will not deign to
“repel such attacks, especially on the field of the public papers.

“At the same time, if there be any friend of truth who shall
“discover errors in my Book, which undoubtedly may easily be
“done, and who shall have so much friendship for me as to ad-
“dress himself directly to me, I will take care to have them cor-
“rected, and will openly acknowledge the obligation in terms of
“the highest respect; because, like that man, I aim at nothing
“but truth, and honour those only who love it.

“I stand, Sir, quite alone. As I belong to no party I have
“no one literary Journal at my disposal. It is long since I knew
“by experience, that I had not the credit to get any thing insert-
“ed in that of Paris, even in the service of the miserable. Per-
“mit me to intreat you then to find a place in your impartial pa-
“per for this my present reply, accompanied with my solemn
“protestation of silence for the future.

“One word more; while I complain of the anonymous critic
“who has attacked my Work with so much acrimony, I feel my-
“self obliged to acknowledge that he has pronounced an exces-
“sively fulsome elogium on my style. I know not, however.

“which way to account for it; but I feel myself still more humbled by his praise than irritated by his satire.

“I have the honour to be, &c.

“DE SAINT-PIERRE.”

Paris, Nov. 22, 1787.

The anonymous Reviewer promised to enter more minutely into an examination of my Book in some following sheets of the *Paris-Journal*; but the Public having expressed some displeasure at seeing me attacked rather indecently, on a field to which my friends had no access, the Editor of that Journal, willing to make a show of impartiality, soon after published a fragment of an epistle in verse, intended to do me honour. This elogium is likewise the production of an anonymous Author; for the virtuous conceal themselves to do good, as the malignant to do mischief. The verses detached from the piece, and which contain my panegyric, are exceedingly beautiful; but there are some others in the rest of the epistle, in my opinion, still more beautiful. I would have expatiated much more cordially in praise of them, had they not gone much too far in praise of me. Nevertheless gratitude constrains me to say, that they are the production of Mr. *Therese*, Counsellor at Law, who favoured me a year ago, in the month of January, with this particular testimony of his friendship, and of his superior talents.

Let us return to the point in which the Academicians are principally interested. In order to acquire conviction that the Poles of the Earth are drawn out lengthwise, there is not the least occasion for solving some transcendant geometrical problem, hedged round and round with equations, such as the quadrature of the circle; it is sufficient to possess the most trivial notions of geometry and of physics. Before I proceed to collect the proofs which have already been produced, and to confirm these by the production of others altogether new, I beg leave to say a word or two on the means which may be employed for ascertaining the truth, as much for the sake of my own instruction, as for that of my critics.

We are in the bosom of ignorance like mariners in the midst of a sea without shores. We perceive in it, here and there, some truths scattered about like islands. In order to hit and to distinguish islands in the open Sea, it is not sufficient to know

their distance from the North, or to the East. Their Latitude gives one complete circle, and their Longitude another; but the intersection of these two measurements determines precisely the place where they are. We are capable of ascertaining truth, in like manner, only by considering it under a variety of relations. For this reason it is, that an object which it is in our power to subject to the examination of all our senses, is much better known to us than an object to which we can apply the test of but one. Thus, we have a much more exact knowledge of a tree than of a star, because we both see and touch the tree: the flower of the tree affords us still more knowledge of it than the trunk, because we can farther apply to it the test of smelling; and finally, our observations multiply, when we examine it by the fruit, because we can now call in the evidence of the taste, and have the combined information of four senses at once. As to objects toward which we are able to direct but one of our organs, say that of vision, we can acquire the knowledge of these only by considering them under different aspects. That tower in the horizon, you say, is blue, small and round. You approach it, and find it to be white, lofty and angular. Upon this you conclude it to be square: but on walking round it you see that it is pentagonal. You judge it to be impossible to ascertain it's height without the help of an instrument, for it is of a prodigious elevation. Take an accessible object of comparison, that of your own height, and the length of your shadow, and you will find the self-same relation between these, as between the shadow of the tower and it's elevation, which you deemed to be inaccessible.

Thus the knowledge of any one truth is to be acquired only by considering it under different relations. This is the reason why GOD alone is really intelligent, because He alone knows all the relations which exist among all beings; and farther, why GOD alone is the most universally known of all beings, because the relations which he has established among things manifest Him in all his Works.

All truths run into one another like the links of a chain. We acquire the knowledge of them only by comparing them to each other. Had our Academicians made the proper use of this principle, they must have discovered that the flattening of the Poles was an error. They had only to apply the consequences of this doctrine to the distribution of the Seas. If the Poles are flat-

tened, their radii being the shortest of the Globe, all the Seas must press thitherward, as being the most depressed place of the Earth: on the other hand, if the Equator were the most elevated, all the Seas must retire from it, and the Torrid Zone would present, through it's whole circumference, a Zone of dry land of six leagues and a half of elevation at it's centre; as the radius of the Globe, at the Equator, exceeds by that quantity the radius at the Poles, according to the Academicians.

Now the configuration of the Globe presents us with precisely the contrary of all this: for the most extensive and the most profound Seas are directly over the Equator: and, on the side of our Pole, the land stretches prodigiously forward to the North, and the Seas which it contains are only mediterraneans filled with high lands.

The South Pole is indeed surrounded by a vast Ocean; but as Captain *Cook* could get no nearer to it than a distance of 475 leagues, we are entirely ignorant whether there be any land in it's vicinity. Besides, it is probable, as I have said elsewhere, that Nature, which contrasts and balances all things, has compensated the elevation in territory of the North Pole, by an equivalent elevation in ice on the South Pole. *Cook* found in fact the icy cupola of the South Pole much more extensive, and more elevated, than that which covers the North Pole, and he is against instituting any manner of comparison on the subject. Hear what he says in describing one of it's solid extremities, which prevented his penetrating beyond the 71st degree of South Latitude, and resembled a chain of mountains rising one above another, and losing themselves in the clouds. "There
" never were seen, in my opinion, mountains of ice such as
" these in the seas of Greenland; at least I have never read or
" heard of the like: no comparison therefore can be stated be-
" tween the ices of the North, and those of the Latitudes which
" I am mentioning." (*Cook's Voyages*, January, 1774.)

This prodigious elevation of ices, of which *Cook* saw but one extremity, may therefore be a counterpoise to the elevation of territory on the North Pole, established by the learned labours of the Academicians themselves. But though the frozen Seas of the South Pole may repel the operations of Geometry, we shall see presently, by two authentic observations, that the fluid

Seas which surround it, are more elevated than those at the Equator, and are at the same level with those of the North Pole.

Let us now proceed to verify the elongation of the Poles, by the very method which has been made to serve for a demonstration of their being flattened. This last hypothesis has acquired a new degree of error, from it's application to the distribution of land and water upon the Globe; that of the elongation of the Poles is going to acquire new degrees of evidence, by it's extension to the different harmonies of Nature.

Let us collect, for this purpose, the proofs which lie scattered about in the preceding Volumes. Some of them are geometrical, some geographical, some atmospherical, some nautical, and some astronomical.

I. The first proof of the elongation of the Earth at the Poles, is geometrical. I have inserted it in the Explanation of the Plates, at the beginning of Volume First; it alone is sufficient to set the truth in question in the clearest light of evidence. There was no occasion even for a figure in order to this. It is very easy to conceive that if, in a circle, the degrees of a portion of this circle lengthen the whole portion containing these degrees must likewise lengthen. Now the degrees of the Meridian actually do lengthen under the polar Circle, as they are greater there than under the Equator, according to the Academicians; therefore the polar arch of the Meridian, or which is the same thing, the polar curve lengthens also. I have already employed this argument, to which no reply can be given, to prove that the polar curve was not flattened; I can easily employ it likewise to prove that it is lengthened out.

II. The second proof of the elongation of the Earth at the Poles is atmospheric. It is well known that the height of the Atmosphere diminishes in proportion as we ascend upon a mountain. Now this height diminishes likewise in proportion as we advance toward the Pole. I am furnished, on this subject, with two barometrical experiments. The first for the Northern Hemisphere; and the second for the Southern Hemisphere. The mercury in the Barometer, at Paris, sinks one line at the height of eleven fathom; and it sinks likewise one line in Sweden, on an elevation of only ten fathom, one foot, six inches and four lines. The Atmosphere of Sweden therefore is lower, or what amounts to the very same thing, it's Continent is more elevated than the Land at Paris. The

Earth therefore lengthens out as you proceed northward. This experiment, and it's consequences, cannot be rejected by the Academicians; for they are extracted from the History of the Academy of Sciences, year 1712, page 4. Consult the Explanation of the Plates, Atlantic Hemisphere, beginning of Volume I.

III. The second experiment, to prove the lowering of the Atmosphere at the Poles, was made toward the South Pole. It consists of a series of barometrical observations taken from day to day, in the Southern Hemisphere, by Captain *Cook*, during the years 1773, 1774, and 1775, from which we see, that the mercury scarcely ever rose higher than 29 inches English, beyond the 60th degree of South Latitude, and mounted almost always to 30 inches, and even higher, in the vicinity of the Torrid Zone, which is a proof that the barometer falls as you advance toward the South Pole, as well as toward the North Pole, and that consequently both are elongated.

The Table of these barometrical observations may be consulted; it is given at the end of Captain *Cook's* second Voyage. Those of the same kind, which have been collected in the following Voyage, exhibit no regular difference from each other, whatever be the Latitude of the vessel; which is a proof of their inaccuracy, occasioned most probably by the irregularity which must have arisen from the successive death of the observers; namely of the intelligent *Anderson*, surgeon of the ship, and *Cook's* particular friend; of that great man himself; and of Captain *Clerke* his successor; and perhaps likewise from a zealous partizan of *Newton*, who might have been disposed to throw a cloud over facts so contrary to his system of the flattening of the Poles.

IV. The fourth proof of the elongation of the Poles is nautical. It consists of six experiments of three different species. The two first experiments are taken from the annual descent of the ices of each Pole toward the Line; the two second, from the Currents which descend from the Poles during their summer; and the two last, from the rapidity and the extent of these same Currents, which perform the tour of the Globe alternately during six months: three are for the North Pole, and three for the South Pole.

The first experiment, namely that deduced from the descent of the ices of the North Pole, is detailed in the First Volume of

this Work, Study Fourth. I have there quoted the testimonies of the most celebrated Navigators of the North : particularly of *Ellis* of England, of *Linschoten* and *Barents* of Holland, of *Martens* of Hamburg, and of *Denis* the French Governor of Canada, who attest, that these ices are of a prodigious height, and that they are frequently met with in the spring in temperate Latitudes. *Denis* assures us that they are loftier than the turrets of Notre-Dame, that they sometimes form floating chains of more than a day's sailing, and that they run aground as far south as the great bank of Newfoundland. The most northerly part of this bank hardly extends beyond the fiftieth degree ; and mariners engaged in the whale-fishery do not fall in with the solid ices, in summer, till they approach the 75th degree. But on the supposition that those solid ices extend in winter from the Pole to the 65th degree, the floating ices detached from the icy Continent, perform a course of 375 leagues in the two first months of spring. It is not the wind which drives them southward, for the fishing vessels which meet them have frequently fair winds ; variable winds would carry them indifferently to the North, to the East, or to the West : but it is the Current from the North, which carries them constantly every year toward the Line, because the Pole from which they take their departure is more elevated.

V. The second experiment of the same kind, for the South Pole, is extracted from Captain *Cook's* Voyage, the 10th December, 1772. "The 10th December, eight o'clock in the morning, we discovered ices to our North-West ;" to which *Mr. Forster* adds : "and about two leagues to windward, another mass which resembled a point of white land. In the afternoon, we passed close by a third which was cubical, and was two thousand feet long, two hundred feet broad, and at least two hundred feet in height." *Cook* was then in the 51st degree of South Latitude, and two degrees West Longitude from the Cape of Good-Hope. He saw a great many more up to the 17th January, 1773 ; but being at that epocha in the Latitude of 65 degrees, 15 minutes, South, he was stopped by a bank of broken ice which prevented his going farther southward. Thus, on the supposition that the first ice with which he found himself entangled on the 10th of December, had taken its departure from that point on the 10th of October, the season

at which it is supposed that the action of the Sun has begun to dissolve the ices of the South Pole, it must have advanced at least 14 degrees, that is 350 leagues, toward the Line, in two months: that is, it must have travelled nearly the same distance, in the same space of time, with the ices which descend from the North Pole. The South Pole, therefore, as well as the North Pole, is more elevated than the Equator, seeing it's ices descend toward the Torrid Zone.

VI. The third nautical experiment demonstrative of the elongation of the North Pole, is deduced from it's Currents themselves, which issue directly from the bays and the straits of the North, with the rapidity of sluices. I have quoted, to this purpose, the same Navigators of the North; *Linschoten* and *Barents*, employed by the States of Holland to discover a North-west passage to China; and *Ellis*, entrusted with a commission from England to attempt a North-east passage to the South Sea, through the bottom of Hudson's Bay. They have discovered, at the extremity of those Northern Seas, Currents which issued from bays and straits, running at the rate of from eight to ten leagues an hour, hurrying along with them an infinite multitude of floating icy promontories, and of tumultuous tides, which as well as the Currents, precipitated themselves directly from the North, from the North-east, or from the North-west, according as the land lay. In conformity to those invariable and multiplied facts, I myself have derived complete conviction, that the fusion of the polar ices was the second cause of the movements of the Seas; that the Sun was the primary cause; and on this I founded my theory of the tides. See Vol. I. Explanation of the Plates, Atlantic Hemisphere.

VII. The Currents of the South-Sea in like manner have their source in the ices of the South Pole. Hear what *Cook* says on the subject, in his Journal, January 1774. "Indeed
" the majority of us were of opinion, that this ice extended to
" the pole; or that it might possibly join some land, to which
" it has adhered from the earliest times: that to the South of
" this parallel are formed all the ices which we found here and
" there to the North; that they are afterwards detached by
" violent gusts of wind, or by other causes, and thrown to the
" North by the Currents, which, in high Latitudes, we always
" observed to bear in that direction."

This fourth nautical experiment, accordingly, proves that the South Pole is elongated, as well as the North Pole; for if both were flattened, the Currents would set in towards them, instead of flowing toward the Line.

Those Southern Currents are not so violent at their source as the Northern, because they are not like them collected in bays, and afterwards disgorged by straits; but we shall see presently that they extend quite as far.

VIII. The fifth nautical proof of the elevation of the Poles above the Horizon of all Seas, is founded on the rapidity and the length of their Currents, which perform the tour of the Globe. The Reader may consult on this subject, the extent of my researches, and of my proofs, at the beginning of my First Volume, in the Explanation of the Plate, Atlantic Hemisphere. I quoted, first, the Current of the Indian Ocean, which flows six months toward the East, and six months toward the West, according to the testimony of all the Navigators of India. I have demonstrated that this alternate and half-yearly Current cannot possibly be ascribed, in any one respect, to the course of the Moon and of the Sun, which uniformly move from East to West, but to the combined heat of those luminaries, which melt, for six months alternately, the ices of each Pole.

I have afterwards adduced two very curious observations, in proof of the existence of a similar alternate and half yearly Current in the Atlantic Ocean, in which till now no such thing had been suspected. The first is that of *Rennefort*, who found, in the month of July 1666, on leaving the Azores, the Sea covered with the wrecks of a naval engagement which had taken place nine days before, between the English and Dutch, off Ostend. These wrecks had been carried along, in nine days, more than 275 leagues to the South, which is considerably above 30 leagues a day: and this is a fifth nautical experiment which proves, from the rapidity of the Currents of the North, the considerable elevation of that Pole above the Horizon of the Seas.

IX. My sixth nautical experiment demonstrates particularly the elevation of the South Pole, from the extent of it's Currents, which in winter force their way up to the extremities of the Atlantic. It is the observation of Mr. *Pennant*, the celebrated English Naturalist, who relates, that the Sea threw on the coasts of Scotland the mast of the Tilbury man of war, which

was burnt in the road of Jamaica ; and that they every year pick up on the shores of the northern isles, the seeds of plants which grow no where but in Jamaica. *Cook* likewise assures us, in the *Journal of his Voyages*, as an undoubted fact, that there are found every year on the coast of Iceland, in great quantities, large flat and round seeds called the ox-eye, which grow only in America.

X. and XI. The astronomical proofs of the elongation of the Poles are three in number. The two first are Lunar. I mean the twofold observation of *Tycho-Brhaë* and of *Kepler*, who saw, in central eclipses of the Moon, the shadow of the Earth lengthened at the Poles. I have quoted it Vol. I. Study IV. It is impossible to oppose any thing to the ocular testimony of two Astronomers of such high reputation, whose calculations, so far from being favoured, were deranged by their observations.

XII. The third astronomical proof of the elongation of the Poles is Solar, and respects the North Pole. It is the observation of *Barents*, who perceived, in Nova Zembla, in the 76th degree of North Latitude, the Sun in the Horizon, fifteen days sooner than he expected. The Sun in this case was two degrees and a half more elevated than he ought to have been. Allowing one degree for the refraction of the Atmosphere in winter, at the 76th degree of North Latitude, or even a degree and a half, which is a very considerable concession, there would remain one degree at least, for the extraordinary elevation of the Observer, above the Horizon of Nova Zembla. I have on this occasion detected another mistake of the Academician *Bouguer*, who fixes the greatest refraction of the Sun at no more than 34 minutes, for all climates. It is easy to see that I do not avail myself of all the advantages given me by the Gentlemen whose opinions I am combating. See Vol. I. Explanation of the Plate, Atlantic Hemisphere.

All these twelve proofs, deduced from the different harmonies of Nature, mutually concur in demonstrating that the Poles are elongated. They are supported by a multitude of facts the number of which it were easy for me to increase ; whereas the Academicians are unable to apply to any one phenomenon of the Earth, of the Sea, or of the Atmosphere, their result of the flattening of the Poles, without instantly discovering it to be a mis-

take. Besides, Geometry alone is sufficient to convince them of it.

They have I admit made the vibrations of the pendulum to quadrate with it; but that experiment is liable to a thousand errors. It is at least as much to be suspected as that of the burning mirror, which has served them as a foundation to conclude that the rays of the Moon had no heat; whereas the contrary has been proved both at Rome and at Paris, by Professors of Physicks. The pendulum lengthens by heat and contracts by cold. It is very difficult to counterbalance it's variations by an assemblage of rods of different metals. On the other hand, it is very easy for men, prejudiced from infancy by the doctrine of attraction, to make a mistake of some lines in favour of it. Therefore, all these petty methods of Physicks, subject to so many accidents, can in no respect whatever contradict the elongation of the Poles of the Earth, of which Nature exhibits the same results on the Sea, in the Air, and in the Heavens.

The elongation of the Poles being demonstrated, the Current of the Seas and of the tides follows as a natural consequence. Many persons observing a coincidence between our tides and the phases of the Moon, of the same increases and diminutions, have concluded as certain that this luminary, by means of her attraction, is the first moving principle of those phenomena: but these coincidences exist only in one part of the Atlantic Ocean. They proceed, not from the attraction of the Moon acting upon the Seas, but from her heat, reflected from the Sun on the polar ices, the effusions of which she increases, conformably to certain Laws peculiar to our Continents. Every where else the number, the variety, the duration, the regularity and irregularity of the tides, have no relation whatever to the phases of the Moon, and coincide, on the contrary, with the effects of the Sun on the polar ices, and the configuration of the Poles of the Earth. This we are now going to demonstrate, by employing the same principle of comparison which has enabled us to refute the error of the Academicians respecting the flattening of the Poles, and to prove the truth of my theory respecting their elongation.

If the Moon acted by her attraction on the tides of the Ocean, she would extend the influence of it to mediterranean seas and lakes. But this is not the case, as mediterranean seas and lakes

have no tides, at least no lunar tides ; for we have observed that the lakes situated at the foot of icy mountains, have, in Summer, solar tides, or a flux like the Ocean. Such is the lake of Geneva, which has a regular afternoon's flux. The coincidence, of the flux of lakes in the vicinity of icy mountains, with the heat of the Sun, gives at once a high degree of probability to my theory of the tides ; and, on the contrary, the disagreement of those same fluxes with the phases of the Moon, as well as the tranquillity of mediterraneans when that star passes over their meridian, render at first sight her attraction more liable to suspicion. But we shall see presently, that in the vast Ocean itself, the greatest part of the tides have no manner of relation either to her attraction or to her course.

I have already quoted, in the Explanation of the Plates, the Navigator *Dampier*, who informs us that the highest tide which he observed, on the coasts of New Holland, did not take place till three days after the full Moon. He affirms, as well as all the Navigators of the South, that the tides rise very little between the Tropics, and that they are at most from four to five feet high in the East Indies, and a foot and a half only on the coasts of the South Sea.

Let me now be permitted to ask, Why those tides between the Tropics are so feeble, and so much retarded, under the direct influence of the Moon ? Wherefore the Moon, by her attraction, gives us two tides every twenty-four hours in our Atlantic Ocean, while she produces but one in many places of the South Sea, which is incomparably broader ? Wherefore there are, in that same South Sea, diurnal and semi-diurnal tides, that is of twelve hours and of six hours ? Wherefore the greatest part of the tides take place there constantly at the same hours, and rise to a regular height almost all the year round, whatever may be the irregularities of the phases of the Moon ? Why there are some which rise at the quadratures, just as at the full and new Moons ? Wherefore are they always stronger in proportion as you approach the Poles, and frequently set in towards the Line, contrary to the pretended principle of their impulsion ?

These problems, which it is impossible to solve by the theory of the Moon's attraction at the Equator, are of easy solution, on the hypothesis of the alternate action of the Sun's heat on the ices of the two Poles.

I am going, first, to prove this diversity of the tides, even from the testimony of *Newton's* compatriots, and the zealous partizans of his system. My witnesses are no obscure men; they are persons of science, naval officers of the King of Great Britain, selected, one after another, by the voice of their Nation and the appointment of their Prince, to perform the tour of the Globe, and to derive from their observations, information of importance to the study of Nature. They are men of no less note than Captains *Byron*, *Carteret*, *Cook*, *Clerke*, and the Astronomer Mr. *Wales*. To these I shall subjoin the testimony of *Newton* himself. Let us first of all examine what they relate respecting the tides of the southern part of the South Sea.

In the road of the island of Maffafuero, in 33 degrees, 46 minutes of South Latitude, and 80 degrees, 22 minutes, West Longitude, from the Meridian of London....“ The sea runs “ twelve hours to the North, and then flows back twelve hours “ to the South.” (Captain *Byron*, April, 1765.)

As the island of Maffafuero is in the southern part of the South Sea, it's tides, which set in to the North in April, run therefore toward the Line, in contradiction to the lunar system : besides, it's tides are of twelve hours duration ; another difficulty.

At English Creek, on the coast of New Britain, about the 5th degree of South Latitude, and 152 degrees of Longitude, “ The “ tide has a flux and reflux once in twenty-four hours.” (Captain *Carteret*, August, 1767.)

At the Bay of the Isles, in New Zealand, toward 34 degrees, 59 minutes of South Latitude, and 185 degrees, 36 minutes, West Longitude : “ From the observations which I have been “ able to make on the coast, relatively to the tides, it appears, “ that the flood sets in from the South.” (Captain *Cook*, December, 1769.)

Here are still tides in the open Seas which run toward the Line, against the impulsion of the Moon. They descended at that season to New Zealand, from the South Pole, the Currents of which were in a state of activity, for it was the summer of that Pole, being the month of December. Those of Maffafuero, though observed in the month of April, by Captain *Byron*, had likewise the same origin, because the Currents of the North Pole, which do not commence till toward the end of March, at

the time of our vernal Equinox, had not as yet begun to check the influence of the South Pole in the Southern Hemisphere.

At the mouth of River Endeavour, in New Holland, 15 degrees, 26 minutes of South Latitude, and 214 degrees, 42 minutes West Longitude, where Captain Cook refitted his vessel, after having run aground; "Neither the flood tide, nor the ebb, were considerable, except once in twenty-four hours, just as we found it while we were fast upon the rock." (Captain Cook, June, 1770.)

At the entrance of Christmas-harbour, in Kerguelen's Land, about 48 degrees, 29 minutes South Latitude, and 68 degrees, 42 minutes East Longitude; "While we were lying at anchor we observed that the flood-tide came from the South-East, running two knots at least in an hour." (Captain Cook, December, 1776.)

Here, accordingly, is another tide which descended directly from the South Pole. It appears that this tide was regular and diurnal, that is, a tide of twelve hours; for Cook adds, a few pages afterwards: "It is high water here at the full and change days, about ten o'clock; and the tide rises and falls about four feet."

In the Islands of Otaheité, in 17 degrees 29 minutes, South Latitude, and 149 degrees, 35 minutes Longitude; and of Ulietea, in 16 degrees, 45 minutes, South Latitude: "Some observations were also made on the tide; particularly at Otaheité and Ulietea; with a view of ascertaining it's greatest rise at the first place. When we were there, in my second voyage, Mr. Wales thought he had discovered that it rose higher than I had observed it to do, when I first visited Otaheité in 1769. But the observations we now made proved that it did not; that is, that it never rose higher than twelve or fourteen inches at most. And it was observed to be high-water nearly at noon, as well at the quadratures as at the full and change of the Moon." (Captain Cook, December, 1777.)

Cook gives, in this place of his Journal, a table of the tides in those islands, from the first up to the twenty-sixth of November; from which it is evident that they had but one tide a day, and this, during the whole course of the month, was at it's mean height between eleven and one o'clock. It is accordingly evident, that tides so regular, at epochs of the Moon so differ-

ent, could have no relation whatever to the phases of that luminary.

Cook was at Otaheité, in 1769, in the month of July, that is, in the Winter of the South Pole: He was there a second time, in 1777, in the month of December, that is, in it's Summer: it is accordingly possible that the effusions of this Pole, being then more copious, and nearer to Otaheité, than those of the North-Pole, the tides might be stronger in that island, in the month of December, than in July, and that *Mr. Wales* the Astronomer was in the right.

Let us now observe the effects of the tides in the northern part of the South Sea.

At the entrance of Nootka, on the coast of America, in 49 degrees, 36 minutes, of North Latitude, and 233 degrees, 17 minutes, East Longitude: "It is high-water on the days of the "new and full Moon, at 20 minutes past 12. The perpendicular "rise and fall, eight feet nine inches; which is to be understood "of the day-tides, and those which happen two or three days "after the full and new Moon. The night-tides, at this time, "rise near two feet higher. This was very conspicuous during "the spring-tide of the full Moon, which happened soon after "our arrival; and it it was obvious, that it would be the same "in those of the new Moon, though we did not remain here "long enough to see the whole of it's effect." (Captain *Cook*, April, 1778.)

Here then are two tides a day, or semi-diurnal, on the other side of our Hemisphere, as on our own; whereas it appears that there is only one in the southern Hemisphere, that is, on the South Sea only. Farther, those semi-diurnal tides differ from ours in this, that they take place at the same hour, and that they exhibit no sensible rise till the second or third day after the full Moon. We shall presently unfold the reason of these phenomena, which are totally inexplicable on the hypothesis of the Lunar System.

We shall see, in the two following observations, those northern tides of the South Sea, remarked in April, becoming, in higher Latitudes on the same coast, stronger in May, and still stronger in June, which cannot in any respect be referred to the course of the Moon, which passes then into the southern He-

misphere, but to the course of the Sun, which passes into the northern Hemisphere, and proceeds to warm, more and more, the ices of the North Pole, the fusion of which increases in proportion as the heat of the star of day increases. Besides, the direction of those tides of the North toward the Line, and other circumstances, will constitute a complete confirmation that they derive their origin from the Pole.

At the entrance of Cook's River, on the coast of America, toward 57 degrees, and 51 minutes, North Latitude: "Here was a strong tide setting to the Southward out of the inlet. It was the ebb, and ran between three and four knots in an hour; and it was low water at ten o'clock. A good deal of sea-weed, and some drift-wood, were carried out with the tide. The water too had become thick like that in rivers; but we were encouraged to proceed by finding it as salt at low water as the ocean. The strength of the flood-tide was three knots; and the stream ran up till four in the afternoon." (Captain Cook, May, 1778.)

By *knots* the sailors mean the divisions of the log-rope; and by *log*, a small piece of wood which they throw into the Sea tied to a rope, for measuring the course of a vessel. When in one minute, three divisions, or knots of the rope run out from the ship, they conclude that the vessel, or the current, is making three miles an hour, or one league.

On sailing up the same inlet, at a place where it was only four leagues broad; "Through this channel ran a prodigious tide. It looked frightful to us, who could not tell whether the agitation of the water was occasioned by the stream, or by the breaking of the waves against rocks or banks. . . . Here we lay during the ebb, which ran near five knots in the hour (one league two thirds). Until we got thus far, the water had retained the same degree of saltness at low as at high water; and at both periods was as salt as that in the Ocean. But now the marks of a river displayed themselves. The water taken up this ebb, when at the lowest, was found to be very considerably fresher than any we had hitherto tasted; insomuch that I was convinced we were in a large river, and not in a strait communicating with the Northern Seas." (Captain Cook, 30th May, 1778.)

What *Cook* calls the inlet, to which the name of *Cook's* great River has since been given, is, from it's course, and it's brackish waters, neither a strait nor a river, but a real northern sluice, through which the effusions of the polar ices are discharged into the Ocean. We find others of the same kind at the bottom of Hudson's Bay. *Ellis* was mistaken in these, in taking them for straits which had a communication from the Northern Ocean to the South Sea. It was in the view of dissipating the doubts which had remained on this subject, that *Cook* attempted the same investigation to the north of the coasts of California.

Continuation of the discovery of the interior of the Inlet, or *Cook's* great River: "After we had entered the Bay, the flood set strong into the river Turnagain; and the ebb came out with still greater force; the water falling while we lay at anchor, twenty feet upon a perpendicular." (Captain *Cook*, June, 1778.)

That which *Cook* calls the ebb, or the reflux, appears to me to be the flood, or the flux itself, for it was more tumultuous and more rapid than what he calls the flux; for the re-action never can be more powerful than the action. The falling tide, even in our rivers, is never so strong as the rising tide. This last generally produces a bar at the mouth of the stream, which the other does not.

Cook, prepossessed in favour of the prevailing opinion, that the cause of the tides is between the Tropics, could not assume the resolution to consider this flood, which came from the interior of the land, as a real tide. Nevertheless, in the opposite part of that same Continent, I mean at the bottom of Hudson's Bay, the flood, or the tide, comes from the West, that is from the interior of the country.

The following is what we find related on the subject, in the Introduction to *Cook's* third Voyage. "Middleton, who commanded the expedition in 1741 and 1742, into Hudson's Bay, had proceeded farther north than any of his predecessors in that navigation. He had, between the latitude of 65 and 66 degrees, found a very considerable inlet running Westward, into which he entered with his ships; and after repeated trials of the tides, and endeavours to discover the nature and course of the opening, for three weeks successively, he found

“ the flood constantly to come from the Eastward, and that it
 “ was a large river he had got into, to which he gave the name
 “ of *Wager River*.

“ The accuracy, or rather the fidelity of this report was de-
 “ nied by Mr. Dobbs, who contended that this opening is a
 “ *Strait, and not a fresh water river*, and that Middleton, if he
 “ had examined it properly, would have found a passage through
 “ it to the Western American Ocean. The failure of this Voy-
 “ age therefore only served to furnish our zealous advocate for
 “ the discovery, with new arguments for attempting it once
 “ more ; and he had the good fortune, after getting the reward of
 “ twenty thousand pounds established by act of parliament, to
 “ prevail upon a society of Gentlemen and Merchants to fit out
 “ the Dobbs and California ; which ships it was hoped would be
 “ able to find their way into the Pacific Ocean, by the very open-
 “ ing which Middleton’s voyage had pointed out, and which
 “ he was believed to have misrepresented.

“ This renovation of hope only produced fresh disappoint-
 “ ment. For it is well known, that the Voyage of the Dobbs
 “ and California,* instead of confuting, strongly confirmed, all
 “ that Middleton had asserted. The supposed strait was found
 “ to be nothing more than a fresh water river, and it’s utmost
 “ Western navigable boundaries were now ascertained by ac-
 “ curate examination.”

Wager’s river accordingly produces a real tide from the
 West, because it is one of the sluices which open from the
 North into the Atlantic Ocean: it is evident therefore that
Cook’s great River produces, on it’s side, a real tide from the
 East, because it is likewise one of the sluices of the North into
 the South Sea.

Besides, the height and the tumult of those tides of *Cook’s*
 great River, similar to those of the bottom of Hudson’s Bay, of
 Waigat’s Strait, &c. the diminution of their saltness, and their
 general direction toward the Line, prove that they are formed
 in summer, in the north of the South Sea, as well as in the north
 of the Atlantic Ocean, from the fusion of the ices of the North
 Pole.

* Mr. *Ellis* embarked in the Voyage, and he it is who wrote the relation of
 it, which I have repeatedly quoted.

In the sequel of *Cook's Voyage*, finished by Captain *Clerke*, we shall find two other observations respecting the tides, which the lunar system is equally incapable of accounting for.

At the English observatory, Sandwich-Islands, in the bay of Karakakoo, in 19 degrees, 28 minutes, North Latitude, and 204 degrees East Longitude, "the tides are very regular, flowing " and ebbing six hours each. The flood comes from the East-ward; and it is high water at the full and change of the moon " forty-five minutes past three, apparent time." (Captain *Clerke*, March, 1779.)

At St. Peter and St. Paul's town, in Kamtschatka, in 53 degrees, 38 minutes North Latitude, and 158 degrees, 43 minutes, East Longitude, "it was high water on the full and change of " the Moon, at thirty-six minutes past four, and the greatest " rise was five feet eight inches. The tides were very regular " every twelve hours." (Captain *Clerke*, October, 1779.)

Captain *Clerke*, prejudiced as well as *Cook* in favour of the system of the Moon's attraction in the Torrid Zone, strains, to no purpose, to refer to the irregular phases of that star, the tides which take place at regular hours in the South Sea, as well as their other phenomena. Mr. *Wales* the Astronomer, who accompanied *Cook* on his second Voyage, is obliged to acknowledge, on this subject, the defectiveness of *Newton's* theory. Hear what he says of it, in an extract inserted in the general introduction to *Cook's* last Voyage: "The number of places, at " which the rise and times of flowing of tides have been observed, in these voyages, is very great; and hence an important article of useful knowledge is afforded. In these observations, some very curious, and even unexpected circumstances have offered themselves to our consideration. It will be " sufficient to instance the exceedingly small height to which " the tide rises in the middle of the great Pacific Ocean; where " it falls short two-thirds at least of what might have been expected from theory and calculation."

The Partizans of the Newtonian system would find themselves reduced to very great embarrassment, were they called upon to explain, in a satisfying manner, first, Why there are, daily, two tides of six hours in the Atlantic Ocean? then, Why there is but one of twelve hours in the southern part of the South Sea, as at the island of Otaheité, on the coast of New

Holland, on that of New Britain, at the island of Massafuero, &c. ? Why, on the other hand, in the northern part of that very same South Sea, the two tides of six hours re-appear every day equal at the Sandwich islands ; unequal on the coast of America, at the entrance of Nootka ; and toward the same Latitude, reduced to a single tide of twelve hours, on the coast of Asia, at Kamtschatka ?

I could quote others still more extraordinary. On account of those strongly marked and very numerous dissonances of the course of the tides, with that of the Moon, with a small number of which only however *Newton* was acquainted, he himself was constrained to admit, as I have mentioned in another place, “ that there must be, in the periodical return of the tides, some “ other mixed cause, hitherto unknown. (*Newton's Philosophy*, Chap. 18.)

This other cause hitherto unknown, is the fusion of the polar ices, which consist of a circumference of from five to six thousand leagues, in their winter, and from two to three thousand at most in their summer. Those ices, by flowing alternately into the bosom of the Seas, produce all their various phenomena. If, in our Summer, there be two tides a day in the Atlantic Ocean, it is because of the alternate divergent effusions of the two Continents, the old and the new, which approach toward the North, whereof the one pours out by day, and the other by night, the waters from the ice, which the Sun melts on the East and on the West side of the Pole he encompasses every day with his fires, and thaws for six months together. If there be a retardation of 22 minutes on one tide, from that which succeeds it, it is because the cupola of the polar ices in fusion, daily diminishes, and because it's effluxes are retarded by the sinuosities of the Atlantic channel. If, in our winter, there are likewise two tides, undergoing a daily retardation on our coasts, it is because the effluxes of the South Pole, entering into the channel of the Atlantic, likewise undergo two divergent impulsions at it's mouth ; the one in America, at Cape Horn, and the other in Africa, at the Cape of Good-Hope. These two alternate divergent effusions of the Currents of the South Pole, if I am not mistaken, is the very circumstance that renders these two Capes, which receive their first impulsion, so tempestuous, and the doubling of them so difficult during the

summer of that Pole to vessels going out of the Atlantic Ocean ; for then they meet in the teeth the Currents which are descending from the South Pole. From this reason it is, that they find it extremely difficult to double the Cape of Good-Hope, during the months of November, December, January, February, and March, on Voyages to India, and that, on the contrary, they pass it with ease in our summer months, because they are then assisted by the currents of the North Pole which waft them out of the Atlantic. They experience the contrary of this on their return from India during our winter months.

I am induced, from these considerations, to believe that vessels on their way to the South Sea, would encounter fewer obstacles in doubling Cape Horn, during it's winter than during it's summer ; for they would not then be driven back into the Atlantic by the Currents of the South Pole, and they would be assisted, on the contrary, in getting out of it, by those of the North Pole. I could support this conjecture by the experience of many Navigators. That of Admiral *Anson* will perhaps be adduced as an objection ; but he doubled this Cape only in the months of March and April, which are besides two of the most tempestuous months in the year, because of the general revolution of the Atmosphere and of the Ocean, which takes place at the Equinox, when the Sun passes from the one Hemisphere to the other.

Let us now explain, upon the same principles, why the tides of the South Sea do not resemble those of the Atlantic Ocean. The South Pole has not, as the North Pole has, a double Continent, which separates into two the divergent effusions which the Sun daily sets a-flowing from it's ices. Nay it has no Continent whatever : it has consequently no channel, in passing through which it's effluxes should be retarded. It's effusions accordingly flow directly into the vast Southern Ocean, forming, on the half of that Pole, a series of divergent emanations which perform the tour of it in twenty-four hours, like the rays of the Sun. When a bundle of these effusions falls upon an island, it produces there a tide of twelve hours, that is, of the same duration with that which the Sun employs in heating the icy cupola, through which the Meridian of that island passes. Such are the tides of the Islands of Otaheité, of Maffafuero, of New-Holland, of New-Britain, &c. Each of these tides lasts as long

as the course of the Sun above the Horizon, and is regular like his course. Thus, while the Sun is heating for twelve hours together, with his vertical fires, the southern islands of the South Sea, he cools them by a tide of twelve hours, which he extracts out of the ices of the South Pole, by his horizontal fires. Contrary effects frequently proceed from the same cause.

This order of tides is by no means the same in the northern part of the South Sea. In that opposite part of our Hemisphere, the two Continents still approach toward the North. They pour therefore by turns, in summer, into the channel which separates them, the two semi-diurnal effusions of their Pole, and there they collect by turns, in Winter, those of the South Pole, which produces two tides a day, as in the Atlantic Ocean. But as this channel, formed to the north of the South Sea, by the two Continents, is extremely widened to below the 55th degree of North Latitude, or rather, as it ceases to exist by the almost sudden retreating of the American and the Asiatic Continents, which go off divergently to the East and to the West, it comes to pass, that those places only, which are situated in the point of divergence of the northern part of these two Continents, experience two tides a day. Such are the Sandwich Islands, situated precisely in the confluence of these two Currents, at proportional distances from America and from Asia, toward the 21st degree of North Latitude. When this place is more exposed to the Current of the one Continent than to that of the other, it's two semi-diurnal tides are unequal, as at the entrance of Nootka, on the coast of America; but when it is completely out of the influence of the one, and entirely under that of the other, it receives only one tide a day, as at Kamtschatka, on the coast of Asia, and this tide is then of twelve hours, as the action of the Sun on the half of the Pole, the effusions of which in this case undergo no division.

Hence it is evident, that two harbours may be situated in the same sea, and under the same parallel, and have, the one two tides a day, and the other only one, and that the duration of those tides, whether double or single, whether double equal or double unequal, whether regular or retarded, is always of twelve hours, every twenty-four hours; that is, precisely the time which the Sun employs in heating that half of the polar cupola from which they flow: which cannot possibly be referred to

the unequal course of the Sun between the Tropics, and still much less to that of the Moon, which is frequently but a few hours above the Horizon of such harbour.

I have established, then, by facts simple, clear and numerous, the disagreement of the tides in most Seas with the pretended action of the Moon on the Equator, and, on the contrary, their perfect coincidence with the action of the Sun on the ices of the Poles.

I beg the Reader's pardon, but the importance of those truths obliges me to recapitulate them.

1st. The attraction of the Moon, as acting on the waters of the Ocean, is contradicted by the insensibility to her influence of mediterraneans and lakes, which never undergo any motion when that luminary passes over their Meridian, and even over their Zenith. On the contrary, the action of the heat of the Sun, which extracts from the ices of the Poles the Currents and the Tides of the Ocean, is ascertained by his influence on the icy mountains out of which issue, in summer, currents and fluxes which produce real tides in the lakes which are at their feet, as is visible in the lake of Geneva, situated at the bottom of the Rhetian Alps. The Seas are the lakes of the Globe, and the Poles are the Alps of it.

2dly. The pretended attraction of the Moon on the Ocean is totally inapplicable either to the two tides of six hours, or semi-diurnal, of the Atlantic Ocean, because that star passes daily only over it's Zenith; and equally so to the tide of twelve hours, or diurnal, of the southern part of the South Sea, because it passes, every day, over both the Zenith and Nadir of that vast Ocean; and to the tides whether semi-diurnal or diurnal of the northern part of the same Ocean, and to the variety of it's tides, which here increase at the full* and new Moons, and there, several

* I am of opinion with Pliny, that the Moon by her heat dissolves ice and snow. Accordingly, when she is at the full, she must contribute to the fusion of the polar ices, and consequently to the rising of the tides. But, if these increase upon our coasts at the new-moon likewise, I think that those superabundant meltings have also been occasioned by the full moon, and are retarded in the r course by some particular configuration of one of the two Continents. At any rate, this difficulty is not of harder solution, on my theory, than that of attraction, which, in other respects, is incapable of explaining the greatest part of the nautical phenomena that I have just related.

days after, which here increase at the quadratures, and there diminish; and to their uniform equality at other places; and to the direction of those which go toward the Line, and to their elevation, which increases toward the Poles, and diminishes under the very Zone of lunar attraction, that is under the Equator. On the contrary, the action of the heat of the Sun on the Poles of the World, perfectly explains the superior height of the tides near the Poles, and their depression near the Equator: their divergence from the Pole whence they flow, and their perfect concordance with the Continents from which they descend; being double in twenty-four hours, when the Hemisphere which emits them, or which receives them, is separated into two Continents; double and unequal, when the divergency of the two Continents is unequal; simple and singular, when there is only one Continent which emits them, or where there is no Continent at all.

3dly. The attraction of the Moon, which goes always from East to West, cannot in any respect be applied to the course of the Indian Ocean, which flows for six months toward the East, and six months toward the West; nor to the course of the Atlantic Ocean, which flows six months to the North, and six months to the South. On the contrary, the action of the half-yearly and alternate heat of the Sun, around each Pole, covered with a Sea of ice of five or six thousand leagues circumference, in winter, and of two or three thousand in summer, is in perfect accord with the half-yearly and alternate Current which descends from this Pole, in it's flux toward the opposite Pole, conformably to the direction of the Continents, and of the Archipelagoes which serve as shores to it.

On this subject I beg leave to observe, that though the South Sea does not appear to present any channel to the course of the polar effluxes, from the vast divergence of America and Asia, we may however catch a glance of one, sensibly formed by the projection of it's Archipelagoes, which are in correspondence with the two Continents. By means of this channel it is, that the Sandwich islands, which are situated in the northern part of the South Sea, toward the 21st degree of Latitude, have two tides a day, from the divergent position of America and of Asia, though the strait which separates these two Continents be in the 65th degree of North Latitude. Not that those islands and this strait of the North are exactly under the same Meridian;

but the Sandwich islands are placed on a curve, corresponding to the sinuous curve of America, and whose origin would be at the strait of the North. That curve might be prolonged to the most remote Archipelagoes of the South Sea, which are visited with two tides a day; and it would there express the Current formed by the divergent separation of America and Asia, as has been said in another place. All islands are in the midst of currents. On looking therefore at the South Pole of the Globe, with a bird's-eye view, we should see a succession of Archipelagoes, dispersed in a spiral line all the way to the Northern Hemisphere, which indicates the Current of the South Sea, just as the projection of the two Continents, on the side of the North Pole, indicates the Current of the Atlantic. Thus the course of the Seas, from the one Pole to the other, is in a spiral line round the Globe, like the course of the Sun from the one Tropic to the other.

This perception adds a new degree of probability to the correspondence of the movements of the Sea with those of the Sun. I do not mean to assert that the chain of Archipelagoes, which project in a spiral direction in the South Sea, is not interrupted in some places; but those interruptions, in my apprehension, proceed only from the imperfection of our discoveries. We might, if I am not mistaken, extend them much farther, by guiding ourselves in the discovery of the unknown islands of that Sea, upon the projection of the islands which are already known. Such voyages ought not to be made in a direct progress from the Line toward the Pole, or by describing the same parallel round the Globe, as the practice has been; but by pursuing the spiral direction of which I have been speaking, and which is sufficiently indicated by the general current itself of the Ocean. Particular care ought to be taken to observe the nautical fruits which the alternate Current of the Seas never fails to waft from one Island to another, frequently at prodigious distances. It was by those simple and natural means, that the ancient Nations of the South of Asia discovered so many islands in the South Sea, where their manners and their language are distinguishable to this day. Thus, by abandoning themselves to Nature, who frequently seconds us much better than our own skill, they landed without the help of chart or instrument

on a multitude of islands, of which they had never so much as heard the names.

I have indicated in the beginning of the first Volume, those simple methods of discovery and of communication between maritime Nations. It is in the Explanation of the Plates, where I am speaking of the Atlantic Hemisphere, and on the subject of *Christopher Columbus*, who on the point of perishing at sea on his first return from America, put the relation of his discovery in a cask, which he committed to the waves in the hope that it might be cast on some shore. There I observed, that "a simple glass bottle might preserve such a deposit for ages, on the surface of the Ocean, and convey it oftener than once from the one Pole to the other." This experiment has just been realized in part on the coasts of Europe.* The account of it is given in

* I would recommend it to Navigators, who take an interest in the progress of natural knowledge, frequently to repeat this experiment, which is so easy, and attended with so little expense. There is no place where empty bottles are more common, and of less use, than on board a ship. On leaving port, there are a great number of bottles filled with wine, beer, cyder and spirits, the greatest part of which are emptied in the course of a few weeks, without the means of filling them again during the whole voyage. In the view of committing some of them to the sea, there might be fitted to them, perpendicularly, a little mast with a bit of cloth or tuft of white feathers at the top. this signal would detach it from the azury ground of the Sea, and render it perceptible a great way off. It would be proper to case it round with cordage, to prevent it's being broken, on reaching a shore, to which the Currents and the Tides would infallibly carry it sooner or later. Essays of this sort will appear mere children's play to our men of science, but they may be matters of the last importance to seafaring people. They may serve to indicate to them the direction and the velocity of the Currents, in a manner much more infallible, and of far greater extent, than the log which is thrown, on board of ships, or than the little boats which are set a-floating. This last method, though frequently employed by the illustrious *Cook*, never could give any thing more than the relative velocity of the boat and of the ship, and not the intrinsic velocity of the current. Finally, such essays exposed to hazard as they are, may be employed by mariners at Sea, to convey intelligence of themselves to their friends, at immense distances from land, as is evident in the experiment of the Bay of Biscay, and to obtain assistance from them, should they have the misfortune to be shipwrecked on some desert island.

We do not repose sufficient confidence in Nature. We might employ preferably to bottles, some of the trajectories which she uses in different climates, to keep up the chain of her correspondences all over the Globe. One of the most widely diffused over the tropical Seas is the cocoa. This fruit frequently sails to shores five or six hundred leagues distant from that on which

the *Mercury of France*, of Saturday 12th January, 1788, No. 2, pages 84 and 85, political part.

“ In the month of May of this year, some fishermen of Arranches, near Bayeux, found at Sea a small bottle well

Nature formed it for crossing the Ocean. It is of an oblong, triangular, keel-shaped form so that it floats away on one of it's angles, as on a keel, and passing through the straits of rocks, it runs ashore at length on the strand, where it quickly germinates. It is fortified against the shock of driving aground by a case called *caire*, which is an inch or two thick over the circumference of the fruit, and three or four at its pointed extremity, which may be considered as it's prow, with so much the more reason that the other extremity is flattened like a poop. This *caire*, or husk, is covered externally, with a smooth and coriaceous membrane, on which characters might be traced; and it is formed internally of filaments interlaced, and mixed with a powder resembling saw-dust. By means of this elastic cover, the cocoa may be darted by the violence of the billows upon rocks, without receiving any injury. Farther, it's interior shell consists of a matter more flexible than stone, and harder than wood, impenetrable to water, where it may remain a long time without rotting: this is the case with it's husk likewise, of which the Indians, for this very reason, make excellent cordage for shipping. The shell of the cocoa-nut is so very hard, that the germ never could force it's way out, had not Nature contrived in it's pointed extremity, where the *caire* is strongest, three small holes covered with a simple pellicle.

There are besides a great many other bulky vegetables, which the Currents of the Ocean convey to prodigious distances, such as the firs and the birches of the North, the double cocoas of the Sechelles islands, the bamboos of the Ganges, the great bulrushes of the Cape of Good-Hope, &c. It would be very easy to write on their stems with a sharp-pointed shell, and to render them distinguishable at Sea by some apparent signal.

Similar resources might be found among amphibious animals, such as tortoises, which transport themselves to inconceivable distances by means of the Currents. I have read somewhere in the History of China, that one of it's ancient Kings, accompanied by a crowd of people, one day beheld a tortoise emerge from the Sea, on the back of which were inscribed the Laws which, at this day, constitute the basis of the Chinese government. It is probable that this Legislator had availed himself of the moment when this tortoise came on shore, according to custom, to look out for a place where to lay her eggs, to write upon her back the Laws which he wished to establish; and that he in like manner took advantage of the day following this arrangement, when that animal never fails to return to the same place to deposit her eggs, to impress on a simple People a respect for Laws which issued out of the bosom of the Ocean, and at sight of the wonderful tablets on which they were inscribed.

Sea-birds might, farther, furnish more expeditious methods of communication, in as much as their flight is very rapid, and that they are so familiar on the desert shores, that you may take them by the hand, as I know from my own experience on the island of Ascension. There might be affixed to

“ corked up. Impatient to know what it might contain, they
 “ broke it ; it was a letter, the address of which they could not
 “ read, conceived in the English Language. They carried it
 “ to the Judge of the Admiralty, who had it deposited in his
 “ registry. As the inscription announced that it belonged to
 “ an English Lady, he took pains to inform himself whether
 “ such a person existed, and employed the methods which prudence
 “ dictated, to have the letter safely conveyed to her.
 “ The husband of that Lady, a man of letters well known in
 “ his own country by several valuable literary productions, has
 “ just written in return ; and after expressing his gratitude to
 “ the Judge in very strong terms, informs him that the letter
 “ in question was from a brother of his wife’s on his way to
 “ India. He wished to communicate to his sister some intelligence
 “ respecting himself. A vessel which he had seen in
 “ the Bay of Biscay, and which seemed to be proceeding for
 “ England, had suggested the idea of it. He was in hopes
 “ that it might be in his power to get his letter put on board of
 “ her, but she having altered her course, the thought struck
 “ him of putting it into a bottle, and of throwing it into the Sea.”

At length, the journals,* by good fortune, step in to support my theory.

In the view of procuring for a fact of so much importance, all the authenticity of which it is susceptible, I wrote to a Lady of my friends, in Normandy, who cultivates the study of Na-

them, together with a letter of information, some remarkable signal ; and choice might be made, in preference, of such birds as arrive regularly at different seasons, and which frequent particular shores, nay of the land birds of passage, such as the wood-pigeon.

* While this advertisement was printing, the Journal of Paris published, without my knowledge, an extract of my letter to the Editor of the General Journal of France, in answer to my anonymous Critic. This instance of candour discovers, on the part of the Compilers, a much higher degree of impartiality with respect to me, than I supposed. It is worthy of men of letters who possess an influence over the public opinion, and who do not wish to incur the reproach which they themselves sometimes impute, with such good reason, to the corps who formerly opposed the disoveries that militated against their systems. I take this opportunity of doing justice to the impartiality of the Gentlemen Compilers of the Journal of Paris, as I always did to their talents.

ture with singular taste, in the bosom of her own family, entreating her to apply to the Judge of the Admiralty, for certain articles of information from England, for which I had occasion. I even delayed, in expectation of her answer, the printing off this sheet for almost six weeks. The following are the particulars which the Judge of the Admiralty of Arromanches had the politeness to communicate to her, and which she was so good as to convey to me, this 24th of February 1788.

“ The bottle was found two leagues off at sea, to the right of
 “ the parish of Arromanches, which is itself two leagues distant, to the North-east, from the city of Bayeux, on the 9th
 “ of May 1787, and deposited in the Registry of the Admiralty, the 10th of the same month.

“ Mr. *Elphinston*, the husband of the Lady to whom the letter was addressed, intimates, that he cannot pretend to affirm
 “ whether it was the author of the letter who bottled it up, in
 “ the Bay of Biscay, the 17th of August 1786, Latitude 45 degrees, 10 minutes North, Longitude 10 degrees, 56 minutes
 “ West, as it is dated ; or whether some person on board the
 “ vessel which passed them, committed it to the waves.

“ The vessel's name was *Nacket*, and the one on her voyage to Bengal was called the *Intelligence*, commanded by Captain *Livston*.”

“ The names of the fishermen are *Charles le Romain*, master of the boat ; *Nicholas Fresnel*, *Jean-Baptiste le Bas*, and
 “ *Charles l' Ami*, mariners, all of the parish of Arromanches.

“ Signed,

“ PHILIPPE-DE-DELEVILLE.”

The parish of Arromanches is about one degree West Longitude from the Meridian of Greenwich, and in 49 deg. 5 min. North Latitude. Accordingly the bottle thrown into the Sea in 10 deg. 56 min. West Longitude, and 45 deg. 10 min. North Latitude, floated nearly 10 degrees of Longitude, which, in that parallel, at the rate of about 17 leagues to a degree, make 170 degrees toward the East. Again, it advanced 4 degrees northward, having been picked up two leagues to the North of Arromanches, that is, in 49 degrees, 10 minutes Latitude, which makes 100 leagues toward the North, and in the whole, 270 leagues. It employed 266 days in performing this route, from the 17th August 1786 to the 9th of May 1787, which is less than

a league a day. This velocity undoubtedly is not to be compared to that with which the wrecks of the battle of Ostend descended to the Azores, at the rate of more than 35 leagues a day, as has been related in the beginning of Vol. I. The Reader might be disposed to call in question the accuracy of *Rennefort's* observation, and at the same time the consequence which I have deduced from it, to demonstrate the velocity of the general Current of the Ocean, had I not elsewhere proved it by many other nautical facts, and were not the Journals of Navigators filled with similar experiences, which attest, that the Currents and Tides frequently carry vessels along, at the rate of three and four miles an hour, nay run with the rapidity of sluices, making from eight to ten leagues an hour, in straits contiguous to the polar ices in fusion, conformably to the testimony of *Ellis*, of *Linschoten* and of *Barents*. But I venture to affirm, that the slowness with which the letter thrown overboard in the entrance of the Bay of Biscay, arrived on the coasts of Normandy, is a new proof of the existence and of the velocity of the alternate and half-yearly Current of the Atlantic Ocean, hitherto unknown, which I have assimilated to that of the Indian Ocean, and ascribed it to the same cause.

It may be ascertained, by pricking the chart, that the place where the Englishman's bottle was tossed into the Sea, is more than 80 leagues from the Continent, and precisely in the direction of the middle of the opening of the British Channel, through which passes one arm of the general Current of the Atlantic, which carried, in summer, the wrecks of the battle of Ostend as far as the Azores. Now this Current was likewise bearing southward, when the English traveller committed to it a letter for his friends in the North, for it was the 17th of August, that is in the Summer of our Pole, when the fusion of it's ices is flowing southward. This bottle therefore sailed toward the Azores, and undoubtedly far beyond them, during the remainder of the month of August, and the whole month of September, till the equinoctial revolution, which sends backward the course of the Atlantic by the effusions of the South Pole, began to waft it again to the North.

It's return, therefore, is to be calculated only from the month of October, when I suppose it to be in the vicinity of the Line, the calms of which may have stopped it, till it felt the influence

of the South Pole, which does not acquire activity in our Hemisphere till toward the month of December. At that epoch, the course of the Atlantic, which goes to the North, being the same with that of our tides, it might have been brought near our shores, and there exposed to many retardations, by the disgorging of the rivers which crossed it's course, as they threw themselves into the Sea, but chiefly by the re-action of the tides : for if their flux sets in toward the North, their reflux carries back to the South.

It is of essential importance therefore to make experiments of this kind in the open Sea, and especially to pay attention to the direction of the Currents of the Ocean, for fear of conveying southward intelligence designed for the North. At the season when that Current is not favourable, advantage might be taken of the tides, which frequently run in the contrary direction ; but as I have just observed, there is this great inconveniency, that if their flux sets in northward, their reflux carries back again toward the South.

The tides have, in their very flux and reflux, a perfect consonance with the general Currents of the Ocean, and with the course of the Sun. They flow during twelve hours in one day, whether they be divided into two tides of six hours, by the projection of the two Continents, as in the northern Hemisphere ; or whether they flow for twelve hours uninterruptedly, as in the southern Hemisphere : just as the general Current of one Pole flows six months of the year. Accordingly the tides, which consist of twelve hours, in all cases are of a duration precisely equal to that which the Sun employs in warming the half of the polar Hemisphere from which they flow, that is one half-day ; as the general Current which issues from that Pole flows precisely during the same time that the Sun warms that whole Hemisphere, namely during half the year. But as the tides, which are only the polar effusions of half a day, have reflexes equal to their flux, that is of twelve hours, in like manner, the general Currents, which are the half-yearly effusions of a whole Pole, have reflexes equal to their flux, that is of six months, when the Sun puts those of the opposite Pole in a state of activity.

Did time and room permit I could shew how those same general Currents, which are the secondary moving principles of the tides, carry our Navigators sometimes faster, and sometimes

slower than their calculation, according to the season of each Pole. I could find a multitude of proofs of this in Voyages round the World, among others, in Captain *Cook's* second and third Voyages. These Currents frequently interpose obstacles almost insurmountable to vessels making the land. For example, when *Cook* left the island of Otaheité in December, 1777, on his way to make discoveries toward the North, he discovered the Sandwich islands in pursuing that course, where he landed without any difficulty, because the Current of the South Pole was in his favour; but when he returned from the North, and wished to take in necessary refreshments at those very islands, he found the Current from the South so adverse, at the same season, that though he came within sight of them on the 26th of November 1778, it took him more than six weeks tacking about, before he could find proper anchoring ground, and could not get to his moorings till the 17th January 1779. Accordingly, the right season for landing on islands which are of a higher Latitude than that from whence the departure is taken, is the winter of it's Hemisphere, as is evident from the example of his return to the same islands. I could multiply facts in support of a theory so important to Navigation, were I not apprehensive of encroaching on the patience of the Reader. I have the confidence, then, to flatter myself with having placed in the clearest light, the coincidence of the movements of the Ocean with those of the Sun, and their disagreement with the phases of the Moon.

I could produce more than one objection against the system of attraction itself, on which *Newton* accounts for the motion of the planets in the Heavens. Not that I deny, in general, the Law of attraction, of which we see the effects on the Earth, in the gravity of bodies, and in magnetism; but I do not find that the application which has been made of it, by *Newton* and his partizans, to the course of the planets, is accurate. According to *Newton*, the Sun and the Planets reciprocally attract each other with a force which is in the direct proportion of their masses, and the inverse proportion of the square of their distance. A second force blends itself with attraction, to preserve the planets in their orbits. From these combined forces there results an ellipse, the curve described by each planet. This curve is continually undergoing alteration, from the action exercised by the Planets over each other. By means of this theory, the course

of those stars is traced in the Heavens with the utmost precision, according to the Newtonians. The course of the Moon alone had appeared refractory to it; but, to employ the terms used in an Introduction to the Study of Astronomy, an extract of which was given in the Mercury of the 1st December, 1784, No. 48: "This satellite, which the celebrated *Halley* called an "obstinate star, *Sidus pertinax*, on account of the great difficulty "of calculating the irregularities of her course, has been at last "reduced to subjection, by the ingenious method of Messrs. "*Clairault, Euler, D'Alembert, de la Grange, and de la Place.*"

Here then are the most refractory stars subjected to the Laws of attraction. I have but one little objection to make against this domination, and the learned methods, which have subdued the Moon's course. How comes it, that the reciprocal attractions of the planets should have been calculated with so much precision, by our Astronomers, and that they should have so exactly weighed the masses of them, when the Planet discovered a few years ago, by *Herschel*, had not as yet been put into their scales? Does this Planet then attract nothing, and does it feel itself no attraction.

God forbid that I should mean to injure the reputation of *Newton*, and of the ingenious Enquirers who have followed his steps. If, on the one hand, they have betrayed us into some errors, they have contributed, on the other, to enlarge the field of human knowledge. Had *Newton* never invented any thing except his telescope, we should have been under inexpressible obligations to him. He had extended to Man the sphere of the universe, and the sentiment of the infinity of GOD. Others have diffused through all ranks of Society, a taste for the study of Nature, by the superb pictures which they have exhibited of her. While I was detecting their mistakes, I respected their virtue, their talents, their discoveries, and their painful labours. Men equally celebrated, such as *Plato, Aristotle, Pliny, Descartes*, and many others, had like them given currency to great errors. The philosophy of *Aristotle* alone had been, for ages, the insurmountable obstacle to the investigation of truth. Let us never forget that the Republic of Letters ought to be in reality a Republic, which acknowledges no other authority but that of Reason. Besides, Nature has placed each of us in the World, to keep up an immediate correspondence with herself. Her intelligence irradiates

all minds, as her Sun illuminates all eyes. To study her Works only in systems is to observe them merely with the eye of another person.

It was not my intention, then, to exalt myself on the ruins of any one. I do not wish to rear my own pedestal. A grassy turf is elevation sufficient to him who aspires no longer after any thing but repose. Did I possess the courage to present, myself, the History of the weakness of my own mind, it would awaken the passion of those whose envy I may have perhaps provoked. Of how many errors, from infancy upward, have I been the dupe ! By how many false perceptions, ill-founded contempts, mistaken estimations, treacherous friendships, have I practised illusion upon myself ! Those prejudices were not adopted by me on the faith of another only, but on my own. It is not my ambition to attract admirers, but to secure indulgent friends. I prize much more highly the man who bears with my infirmities, than I do him who exaggerates my puny virtues. The one supports me in my weakness, and the other supports himself on my strength ; the one loves me in my poverty, and the other adheres to me in my pretended affluence. Time was when I sought for friends among the men of the world ; but of these I hardly found any except persons who expected from you unbounded complaisance ; protectors who lie heavy upon you instead of sustaining your weight, and who attempt to crush you, if you presume to assert your own liberty. At present, I wish for no friends but among those whose souls are simple, candid, gentle, innocent, and endowed with sensibility. They interest me much more if ignorant rather than learned, suffering rather than prosperous, in cottages rather than in palaces. They are the persons for whom I composed my book, and they are the persons who have made it's fortune. They have done me more good than I wished to them, for their repose. I have administered to them some consolations ; and in return, they have conferred on me a tribute of glory. I have presented to them only the Perspectives of hope ; and they, with emulous zeal, have strained to accumulate upon me a thousand real benefits. My mind was engrossed only with the ills which they endure : and they have restlessly promoted my happiness. It is in the view of acquitting some part of the obligations under which I lie to them, in my turn, that I have composed this additional Volume. May

it merit for me anew, suffrages so pure, so unbiassed, and so affecting ! They are the alone object of my wishes. Ambition disdains them, because they are not possessed of power ; but time will one day respect them, because intrigue can neither give nor destroy them.

This Volume contains among other matter two Histories, of which I give some account in the particular advertisements which precede them. They are accompanied by numerous and long Notes, which sometimes deviate from their Text. But every thing is in union with every thing in Nature, and Studies admit of universal collection. I am accordingly indebted to the Title of my Book for the advantage, which is far from being inconsiderable to talents feeble and variable like mine, of going which way I please, of attaining where I can, and of stopping short when I feel my strength fail.

Some persons to whom I read the Piece entitled THE GAULS, expressed a wish that I would not publish it, till the Work of which it is a part should be completed : but I am uncertain whether I ever shall enjoy leisure to execute it, and whether this species of antique composition is likely to please the taste of the present age. It is, I admit, only a fragment ; but such as it is, it constitutes a complete Work, for it presents an entire picture of the manners of our Ancestors, during the domination of the Druids. Besides, in the most finished labours of Man, What is to be found but fragments ? The History of a King is only a fragment of the History of his Dynasty ; that of his Dynasty, a fragment of the History of his Kingdom ; that of his Kingdom, a fragment of the History of the Human Race ; which is itself merely a fragment of the History of the beings which inhabit the Globe ; the universal History of which would be nothing after all, but a very short Chapter of the History of the innumerable Stars which revolve over our heads, at distances which bid defiance to all the powers of Calculation.

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